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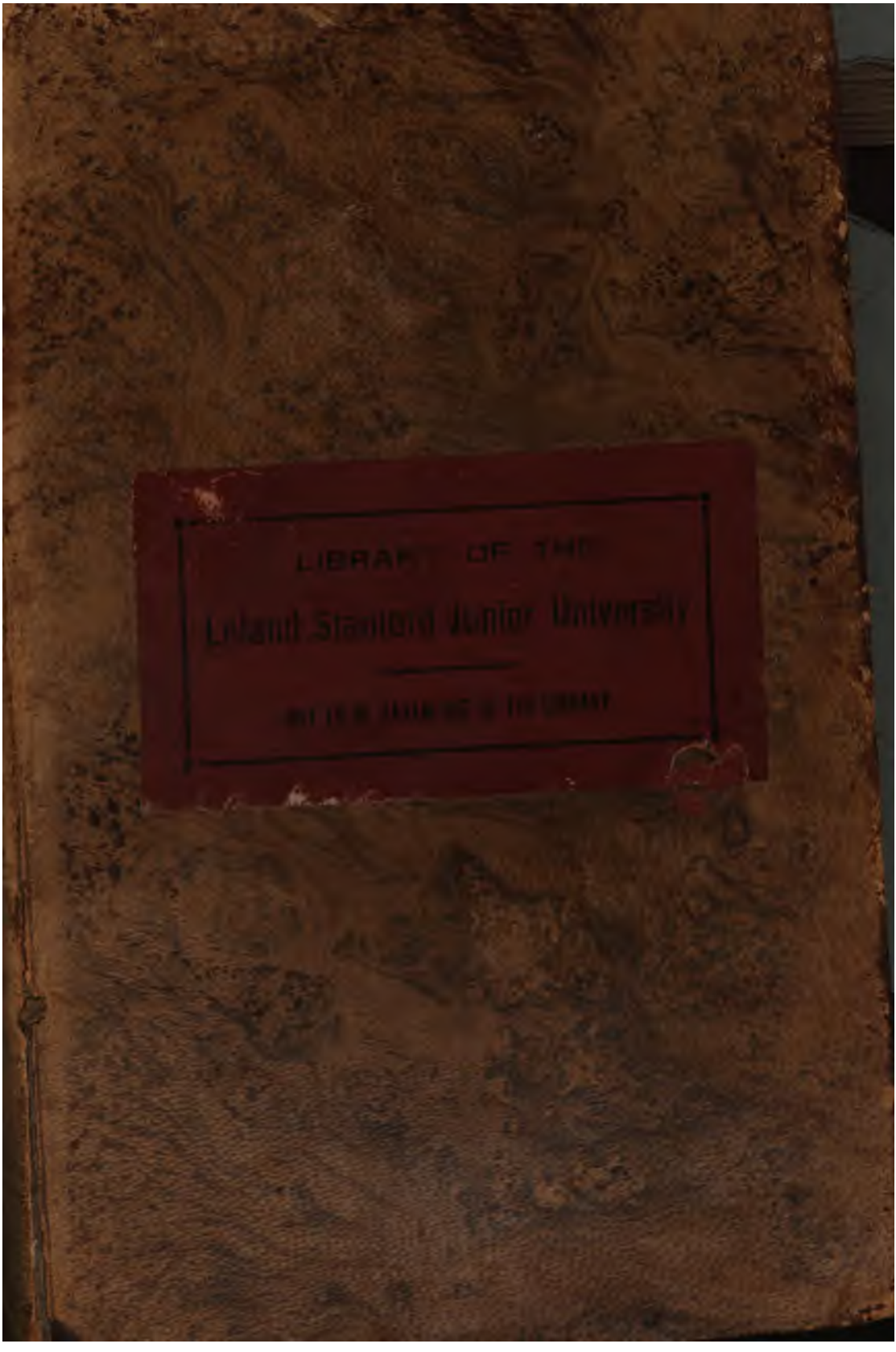
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A HISTORY OF THE EARTH AND ANIMATED NATURE

By Oliver Goldsmith

PHILADELPHIA

Published by Edwd Poole 1823

A

HISTORY OF THE EARTH,

AND

ANIMATED NATURE.

BY OLIVER GOLDSMITH, M. B.

ILLUSTRATED WITH COPPERPLATES.

A NEW EDITION, WITH CORRECTIONS AND ADDITIONS,

IN FIVE VOLUMES.—VOL. III.

PHILADELPHIA:

PUBLISHED BY THOMAS T. ASH.

1823.

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A HISTORY

OF ANIMALS.

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CHAPTER I.

ANIMALS OF THE RAT KIND.

Were it necessary to distinguish animals of the rat kind from all others, we might describe them as having two large cutting teeth, like the hare kind, in each jaw; as covered with hair; and as not ruminating.* These distinctions might serve to guide us, had we not too near an acquaintance with this noxious race to be mistaken in their kind. Their numbers, their minuteness, their vicinity, their vast multiplication, all sufficiently contribute to press them upon our observation, and remind us of their existence. Indeed, if we look through the different ranks of animals, from the largest to the smallest, from the great elephant to the diminutive mouse, we shall find that we suffer greater injuries from the contemptible meanness of the one, than the formidable invasions of the other. Against the elephant, the rhinoceros, or the lion, we can oppose united

[* These animals have the upper fore-teeth wedge-shaped; three grinders, sometimes (though rarely) only two, on each side of the jaws; and the collar-bones complete.]

strength, and by art make up the deficiences of natural power: these we have driven into their native solitudes, and obliged to continue at a distance, in the most inconvenient regions and unhealthful climates. But it is otherwise with the little teazing race I am now describing: no force can be exerted against their unresisting timidity; no arts can diminish their amazing propagation; millions may be at once destroyed, and yet the breach be repaired in the space of a very few weeks; and in proportion as nature has denied them force, it has supplied the defect by their fecundity.

THE GREAT RAT.

THE animal best known at present, and in every respect the most mischievous, is the Great Rat; which, though but a new comer into this country, has taken too secure a possession to be ever removed. This hateful and rapacious creature, though sometimes called the *Rat of Norway*, is utterly unknown in all the northern countries, and, by the best accounts I can learn, comes originally from the Levant. Its first arrival, as I am assured, was upon the coasts of Ireland, in those ships that traded in provisions to Gibraltar; and perhaps we owe to a single pair of these animals, the numerous progeny that now infests the whole extent of the British empire.

This animal, which is called by M. Buffon the *Surmalot*, is in length about nine inches; its eyes are large and black; the colour of the head, and the whole upper part of the body, is of a light brown, mixed with a tawny and ash colour. The end of the nose, the throat, and belly, are of a dirty white,

inclining to gray, the feet and legs are almost bare, and of a dirty pale flesh colour: the tail is as long as the body, covered with minute dusky scales mixed with a few hairs, and adds to the general deformity of its detestable figure. It is chiefly in the colour that this animal differs from the Black Rat, or the Common Rat, as it was once called, but now common no longer. This new invader, in a very few years after its arrival, found means to destroy almost the whole species, and to possess itself of their retreats.

But it was not against the black rat alone that its rapacity was directed; all other animals of inferior strength shared the same misfortunes. The contest with the black rat was of short continuance. As it was unable to contend, and had no holes to fly to for retreat, but where its voracious enemy could pursue, the whole race was soon extinguished. The frog also was an animal equally incapable of combat or defence. It had been designedly introduced into the kingdom of Ireland some years before the Norway rat: and it was seen to multiply amazingly. The inhabitants were pleased with the propagation of a harmless animal that served to rid their fields of insects: and even the prejudices of the people were in its favour, as they supposed that the frog contributed to render their waters more wholesome. But the Norway rat soon put a stop to their increase: as these animals were of an amphibious nature, they pursued the frog to its lakes, and took it even in its own natural element. I am, therefore, assured, that the frog is once more almost extinct in that kingdom: and that the Norway rat having no more enemies left there to destroy, is grown less numerous also.

We are not likely, therefore, to gain by the destruction of our old domestics, since they are re-

placed by such mischievous successors. The Norway rat has the same disposition to injure us, with much greater power of mischief. It burrows in the banks of rivers, ponds, and ditches; and is every year known to do incredible damage to those mounds that are raised to conduct streams, or to prevent rivers from overflowing. In these holes, which it forms pretty near the edge of the water, it chiefly resides during the summer, where it lives upon small animals, fish, and corn. At the approach of winter, it comes nearer the farm-houses; burrows in their corn, eats much, and damages still more than it consumes. But nothing that can be eaten seems to escape its voracity. It destroys rabbits, poultry, and all kinds of game; and, like the polecat, kills much more than it can carry away. It swims with great ease, dives with great celerity, and easily thins the fish pond. In short, scarcely any of the feebler animals escape its rapacity, except the mouse, which shelters itself in its little hole, where the Norway rat is too big to follow.

These animals frequently produce from twelve to eighteen at a time,* and usually bring forth three times a-year. This great increase would quickly be found to overrun the whole country, and render our assiduity to destroy them fruitless, were it not, happily for us, that they eat and destroy each other. The same insatiable appetite that impels them to indiscriminate carnage, also incites the strongest to devour the weakest, even of their own kind. The large male rat generally keeps in a hole by itself, and is dreaded by its own species as the most formidable enemy. In this manner the number of these vermin is kept within due bounds; and when their increase becomes injurious to us, it is repressed by their own rapacity.

* Buffon, vol. xvii, p. 2.

But beside their own enmities among each other, all the stronger carniverous quadrupeds have natural antipathies against them. The dog, though he detests their flesh, yet openly declares his alacrity to pursue them, and attacks them with great animosity. Such as are trained up to killing these vermin, despatch them often with a single squeeze: but those dogs that show any hesitation, are sure to come off but indifferently; for the rat always takes the advantage of a moment's delay, and, instead of waiting for the attack, becomes the aggressor, seizing its pursuer by the lip, and inflicting a very painful and dangerous wound. From the inflammation and other angry symptoms that attend this animal's bite, some have been led to think that it was in some measure venomous; but it is likely that the difficulty of the wound's healing arises merely from its being deep, and lacerated by the teeth, and is rather a consequence of the figure of the instrument that inflicts it, than any venom they may be supposed to possess.

The cat is another formidable enemy of this kind; and yet the generality of our cats neither care to attack it, nor to feed upon it when killed. The cat is a more prudent hunter than the dog, and will not be at the pains to take or combat with an enemy that is not likely to repay her time and danger. Some cats, however, will pursue and take the rat, though often not without an obstinate resistance. If hungry, the cat will sometimes eat the head; but, in general, she is merely content with her victory.

A foe much more dangerous to these vermin is the weasel. This animal pursues them with avidity; and being pretty nearly of their own size, follows them into their holes, where a desperate combat ensues. The strength of each is pretty near equal; but the arms are very different. The rat,

furnished with four long tusks at the extremity of its jaw, rather snaps than bites; but the weasel, where it once fastens, holds, and continuing also to suck the blood at the same time, weakens its antagonist, and always obtains the victory. Mankind have contrived several other methods of destroying those noxious intruders—ferrets, traps, and particularly poison; but of all other poisons, I am told that the nux vomica, ground and mixed with meal, is the most certain, as it is the least dangerous.

To this species I will subjoin as a variety, the Black Rat, mentioned above, greatly resembling the former in figure, but very distinct in nature, as appears from their mutual antipathy. This animal was formerly as mischievous as it was common; but at present it is almost utterly extirpated by the great rat, one malady often expelling another. It is become so scarce, that I do not remember ever to have seen one. It is said to be possessed of all the voracious and unnatural appetites of the former; though, as it is less, they may probably be less noxious. Its length is about seven inches; and the tail is near eight inches long. The colour of the body is of a deep iron gray, bordering upon black, except the belly, which is of a dirty cinereous hue. They have propagated in America in great numbers, being originally introduced from Europe; and as they seem to keep their ground wherever they get footing, they are now become the most noxious animals in that part of the world.

To this also we may subjoin the Black Water Rat, about the same size with the latter, with a larger head, a blunter nose, less eyes, and shorter ears, and the tip of its tail a little white. It was supposed by Ray to be web-footed; but this has been found to be a mistake, its toes pretty much resembling

those of its kind. It never frequents houses, but is usually found on the banks of rivers, ditches, and ponds, where it burrows and breeds. It feeds on fish, frogs, and insects; and in some countries it is eaten on fasting days.

THE MOUSE.

An animal equally mischievous, and equally well known with the former, is the Mouse. Timid, cautious, and active, all its dispositions are similar to those of the rat, except with fewer powers of doing mischief.* Fearful by nature, but familiar from necessity, it attends upon mankind, and comes an unbidden guest to his most delicate entertainments. Fear and necessity seem to regulate all its motions; it never leaves its hole but to seek provision, and seldom ventures above a few paces from home. Different from the rat, it does not go from one house to another, unless it be forced; and, as it is more easily satisfied, it does much less mischief.

Almost all animals are tamed more difficultly in proportion to the cowardice of their natures. The truly bold and courageous easily become familiar, but those that are always fearful are ever suspicious. The mouse being the most feeble, and consequently the most timid of all quadrupeds, except the guinea-pig, is never rendered thoroughly familiar; and, even though fed in a cage, retains its natural apprehensions. In fact, it is to these alone that it owes its security.† No animal has more enemies, and few so incapable of resistance. The owl,

* Buffon, vol. xv, p. 145.

† E volucribus hirundines sunt indociles, e terrestribus mures.—Plin.

the cat, the snake, the hawk, the weasel, the rat itself, destroys this species by millions, and it only subsists by its amazing fecundity.

The mouse brings forth at all seasons, and several times in a year. Its usual number is from six to ten. These in less than a fortnight are strong enough to run about and shift for themselves. They are chiefly found in farmers' yards, and among their corn, but are seldom in those ricks that are much infested with rats. They generally choose the south-west side of the rick, from whence most rain is expected; and from thence they often, of an evening, venture forth to drink the little drops either of rain or dew that hang at the extremities of the straw.* Aristotle gives us an idea of their prodigious fecundity by assuring us, that having put a mouse with young into a vessel of corn, in some time after he found a hundred and twenty mice, all sprung from one original. The early growth of this animal implies also the short duration of its life, which seldom lasts above two or three years. This species is very much diffused, being found in almost all parts of the ancient continent, and having been exported to the new.† They are animals that, while they fear human society, closely attend it, and, although enemies to man, are never found but near those places where he has fixed his habitation. Numberless ways have been found for destroying them; and Gesner has minutely described the variety of traps by which they are taken. Our Society for the Encouragement of Arts and Manufactures proposed a reward for the most ingenious contrivance for that purpose; and I observed almost every candidate passing off descriptions as inventions of his own. I thought it was cruel to detect the plagiarism, or frustrate the

* Buffon, vol. xv, p. 147. † Lisle's Husbandry, vol. ii, p. 391.

1. Guinea Pig _ 2. Long Tailed Squirrel _ 3. Water Rat
4. Short Tailed Field Mouse _ 5. Long Tail'd Field Mouse.

humble ambition of those who would be thought the inventors of a mouse-trap.

To this species merely to avoid teasing the reader with a minute description of animals very inconsiderable and very nearly alike. I will add that of the *Long-tailed Field Mouse*, which is larger than the former, of a colour very nearly resembling the Norway rat, and chiefly found in fields and gardens. They are extremely voracious and hurtful in gardens and young nurseries, where they are killed in great numbers. However, their fecundity quickly repairs the destruction.

Nearly resembling the former but larger, (for it is six inches long,) is the *Short-tailed Field Mouse;* which, as its name implies, has the tail much shorter than the former, it being not above an inch and a half long, and ending in a small tuft. Its colour is more inclining to that of the domestic mouse, the upper part being blackish, and the under of an ash colour. This, as well as the former, is remarkable for laying up provision against winter; and M. Buffon assures us they sometimes have a store of above a bushel at a time.

We may add also the *Shrew Mouse* to this species of minute animals, being about the size of the domestic mouse, but differing greatly from it in the form of its nose, which is very long and slender. The teeth also are of a very singular form, and twenty-eight in number, whereas the common number in the rat kind is not usually above sixteen. The two upper fore-teeth are very sharp, and on each side of them there is a kind of wing or beard, like that of an arrow, scarcely visible but on a close inspection. The other teeth are placed close together, being very small, and seeming scarcely separated; so that with respect to this part of its formation, the animal has some resemblance to the viper. However, it is a

the hair, the colour and the tail of a rat, except that it is flatted on the sides, as mentioned above. But it is still more extraordinary upon other accounts, and different from all other animals whatever. It is so formed that it can contract and enlarge its body at pleasure. It has a muscle like that of horses, by which they move their hides, lying immediately under the skin, and that furnished with such a power of contraction, together with such an elasticity in the false ribs, that this animal can creep into a hole where others seemingly much less, cannot follow. The female is remarkable also for two distinct apertures, one for urine, the other for propagation. The male is equally observable for a peculiarity of conformation; the musky smell is much stronger at one particular season of the year than any other; and the marks of the sex seem to appear and disappear in the same manner.

The ondatra in some measure resembles the beaver in its nature and disposition. They both live in society during winter; they both form houses of two feet and a half wide, in which they reside, several families together. In these they do not assemble to sleep as the marmot, but purely to shelter themselves from the rigour of the season. However, they do not lay up magazines of provision like the beaver; they only form a kind of covert way to and round their dwelling, from whence they issue to procure water and roots, upon which they subsist. During winter their houses are covered under a depth of eight or ten feet of snow; so that they must lead but a cold, gloomy, and necessitous life, during its continuance. During summer they separate two by two, and feed upon the variety of roots and vegetables that the season offers. They then become extremely fat, and are much sought after, as well for their flesh as their skins, which are very valuable. They

then also acquire a very strong scent of musk, so pleasing to an European, but which the savages of Canada cannot abide. What we admire as a perfume, they consider as a most abominable stench, and call one of their rivers, on the banks of which this animal is seen to burrow in numbers, by the name of *the stinking river*, as well as the rat itself, which is denominated by them *the stinkard*. This is a strange diversity among mankind; and perhaps may be ascribed to the different kinds of food among different nations. Such as chiefly feed upon rancid oils and putrid flesh, will often mistake the nature of scents; and, having been long used to ill smells, will by habit consider them as perfumes. Be this as it will, although these nations of northern savages consider the musk rat as intolerably fetid, they nevertheless regard it as very good eating; and, indeed, in this they imitate the epicures of Europe very exactly, whose taste seldom relishes a dish till the nose gives the strongest marks of disapprobation. As to the rest, this animal a good deal resembles the beaver in its habits and disposition; but, as its instincts are less powerful, and its economy less exact, I will reserve for the description of that animal a part of what may be applicable to this.

THE CRICETUS.

The Cricetus, or German rat, which M. Buffon calls the *Hamster*, greatly resembles the water rat in its size, small eyes, and the shortness of its tail. It differs in colour, being rather browner, like the Norway rat, with the belly and legs of a dirty yellow. But the marks by which it may be distinguished from all others are two pouches, like those of a ba-

boon, on each side of its jaw, under the skin, into which it can cram a large quantity of provision. These bags are oblong, and of the size, when filled, of a large walnut. They open into the mouth, and fall back along the neck to the shoulder. Into these the animal can thrust the surplus of those fruits or grains it gathers in the fields, such as wheat, peas, or acorns. When the immediate calls of hunger are satisfied, it then falls to filling these; and thus, loaded with two great bunches on each side of the jaw, it returns home to its hole to deposit the spoil as a store for the winter. The size, the fecundity, and the voraciousness of this animal, render it one of the greatest pests in the countries where it is found, and every method is made use of to destroy it.

But although this animal is very noxious with respect to man, yet, considered with regard to those instincts which conduce to its own support and convenience, it deserves our admiration.* Its hole offers a very curious object for contemplation, and shows a degree of skill superior to the rest of the rat kind. It consists of a variety of apartments fitted up for the different occasions of the little inhabitant. It is generally made on an inclining ground, and always has two entrances, one perpendicular, and the other oblique; though, if there be more than one in a family, there are as many perpendicular holes as there are individuals below. The perpendicular hole is usually that through which they go in and out; the oblique serves to give a thorough air to keep the retreat clean, and, in case one hole is stopped, to give an exit at this. Within about a foot of the perpendicular hole the animal makes two more, where are deposited the family's provisions. These are much more spacious than the former, and are large in proportion to the quantity of the store. Beside these,

* Buffon, vol. xxvi, p. 159.

there is still another apartment warmly lined with grass and straw, where the female brings forth her young: all these communicate with each other, and all together take up a space of ten or twelve feet in diameter. These animals furnish their store-houses with dry corn well cleaned; they also lay in corn in the ear, and beans and peas in the pod. These, when occasion requires, they afterwards separate, carrying out the pods and empty ears by their oblique passage. They usually begin to lay in at the latter end of August; and, as each magazine is filled, they carefully cover up the mouth with earth, and that so neatly that it is no easy matter to discover where the earth has been removed. The only means of finding out their retreats are, therefore, to observe the oblique entrance, which generally has a small quantity of earth before it; and this, though often several yards from their perpendicular retreat, leads those who are skilled in the search to make the discovery. Many German peasants are known to make a livelihood by finding out and bringing off their hoards, which in a fruitful season often furnish two bushels of good grain in each apartment.

Like most others of the rat kind, they produce twice or thrice a-year, and bring five or six at a time. Some years they appear in alarming numbers, at other times they are not so plentiful. The moist seasons assist their propagation; and it often happens on such years that their devastations produce a famine all over the country. Happily, however, for mankind, these, like the rest of their kind, destroy each other; and of two that M. Buffon kept in a cage, male and female, the latter killed and devoured the former. As to the rest, their fur is considered as very valuable; the natives are invited by rewards to destroy them; and the weasel kind seconds the wishes of government with great success. Although they

are usually found brown on the back and white on the belly, yet many of them are observed to be gray, which may probably arise from the difference of age.

THE LEMING.

HAVING considered various kinds of these noxious little animals that elude the indignation of mankind, and subsist by their number, not their strength, we come to a species more bold, more dangerous, and more numerous than any of the former. The Leming, which is a native of Scandinavia, is often seen to pour down in myriads from the northern mountains, and, like a pestilence, destroys all the productions of the earth. It is described as being larger than a dormouse, with a bushy tail, though shorter. It is covered with thin hair of various colours. The extremity of the upper part of the head is black, as are likewise the neck and shoulders, but the rest of the body is reddish, intermixed with small black spots of various figures, as far as the tail, which is not above half an inch long. The eyes are little and black, the ears round and inclining towards the back, the legs before are short, and those behind longer, which gives it a great degree of swiftness. But what it is much more remarkable for than its figure, are its amazing fecundity and extraordinary migrations.

In wet seasons all of the rat kind are known to propagate more than in dry; but this species in particular is so assisted in multiplying by the moisture of the weather, that the inhabitants of Lapland sincerely believe that they drop from the clouds, and that the same magazines that furnish hail and snow pour the leming also upon them. In fact, after long

rain, these animals set forward from their native mountains, and several millions in a troop deluge the whole plain with their numbers.* They move, for the most part, in a square, marching forward by night, and lying still by day. Thus, like an animated torrent, they are often seen more than a mile broad covering the ground, and that so thick that the hindmost touches its leader. It is in vain that the poor inhabitant resists or attempts to stop their progress; they still keep moving forward; and, though thousands are destroyed, myriads are seen to succeed, and make their destruction impracticable. They generally move in lines, which are about three feet from each other, and exactly parallel. Their march is always directed form the north-west to the south-east, and regularly conducted from the beginning. Wherever their motions are turned, nothing can stop them; they go directly forward, impelled by some strange power; and from the time they first set out, they never once think of retreating. If a lake or a river happens to interrupt their progress, they all together take the water, and swim over it; a fire, a deep well, or a torrent, does not turn them out of their straight-lined direction; they boldly plunge into the flames, or leap down the well, and are sometimes seen climbing up on the other side. If they are interrupted by a boat across a river while they are swimming, they never attempt to swim round it, but mount directly up its sides; and the boatmen, who know how vain resistance in such a case would be, calmly suffer the living torrent to pass over, which it does without further damage. If they meet with a stack of hay or corn that interrupts their passage, instead of going over it they gnaw their way through; if they are stopped by a house in their course, if they cannot go through it, they continue

* Phil. Trans. vol. ii, p. 972.

there till they die. It is happy, however, for mankind, that they eat nothing that is prepared for human subsistence; they never enter a house to destroy the provisions, but are contented with eating every root and vegetable that they meet. If they happen to pass through a meadow, they destroy it in a very short time, and give it an appearance of being burnt up and strewed with ashes. If they are interrupted in their course, and a man should imprudently venture to attack one of them, the little animal is no way intimidated by the disparity of strength but furiously flies up at its opponent, and barking somewhat like a puppy, wherever it fastens does not easily quit the hold. If at last the leader be forced out of its line, which it defends as long as it can, and be separated from the rest of its kind, it sets up a plaintive cry, different from that of anger, and, as some pretend to say, gives itself a voluntary death, by hanging itself on the fork of a tree.

An enemy so numerous and destructive would quickly render the countries where they appear utterly uninhabitable, did it not fortunately happen that the same rapacity that animates them to destroy the labours of mankind, at last impels them to destroy and devour each other.* After committing incredible devastations, they are at last seen to separate into two armies, opposed with deadly hatred, along the coasts of the larger lakes and rivers. The Laplanders, who observe them thus drawn up to fight, instead of considering their mutual animosities as a happy riddance of the most dreadful pest, form ominous prognostics from the manner of their arrangement. They consider their combats as a presage of war, and expect an invasion from the Russians or the Swedes, as the sides next those kingdoms happen to conquer. The two divisions, how-

* Dictionnaire Raisonne, vol. ii, p. 610.

ever, continue their engagements and animosity until one party overcomes the other. From that time they utterly disappear, nor is it well known what becomes of either the conquerors or the conquered. Some suppose that they rush headlong into the sea; others, that they kill themselves, as some are found hanging on the forked branches of a tree; and others still, that they are destroyed by the young spring herbage. But the most probable opinion is, that having devoured the vegetable productions of the country, and having nothing more to subsist on, they then fall to devouring each other; and having habituated themselves to that kind of food, continue it. However this be, they are often found dead by thousands, and their carcasses have been known to infect the air for several miles round, so as to produce very malignant disorders. They seem also to infect the plants they have gnawed, for the cattle often die that afterwards feed in the places where they passed.

As to the rest, the male is larger and more beautifully spotted than the female. They are extremely prolific; and what is extraordinary, their breeding does not hinder their march; for some of them have been observed to carry one young one in their mouth, and another on their back. They are greatly preyed upon by the ermine, and, as we are told, even by the rein-deer. The Swedes and Norwegians, who live by husbandry, consider an invasion from these vermin as a terrible visitation; but it is very different with respect to the Laplanders, who lead a vagrant life, and who, like the lemings themselves, if their provisions be destroyed in one part of the country, can easily retire to another. These are never so happy as when an army of lemings come down amongst them; for then they feast upon their flesh, which, though horrid food, and which though

even dogs and cats are known to detest, these little savages esteem very good eating, and devour greedily. They are glad of their arrival also upon another account, for they always expect a great plenty of game the year following, among those fields which the lemings have destroyed.

THE MOLE.

To these minute animals of the rat kind, a great part of whose lives is passed in holes under ground, I will subjoin one little animal more, no way resembling the rat, except that its whole life is spent there. As we have seen some quadrupeds formed to crop the surface of the fields, and others to live upon the tops of trees, so the mole is formed to live wholly under the earth, as if nature meant that no place should be left entirely untenanted. Were we from our own sensations to pronounce upon the life of a quadruped that was never to appear above ground, but was always condemned to hunt for its prey underneath; obliged, whenever, it removed from one place to another, to bore its way through a resisting body, we should be apt to assert, that such an existence must be the most frightful and solitary in nature. However, in the present animal, though we find it condemned to all those seeming inconveniences, we shall discover no signs of wretchedness or distress. No quadruped is fatter, none has a more sleek or glossy skin; and, though denied many advantages that most animals enjoy, it is more liberally possessed of others, which they have in a more scanty proportion.

This animal, so well known in England, is however utterly a stranger in other places, and particularly in Ireland. For such, therefore, as have never

1. Hedge Hog 2. Shrew Mouse 3. Water Shrew Mouse
4. Bat 5. Garden Squirrel 6. Mole.

seen it, a short description will be necessary.* And, in the first place, though somewhat of a size between the rat and the mouse, it no way resembles either, being an animal entirely of a singular kind, and perfectly unlike any other quadruped whatever. It is bigger than a mouse, with a coat of fine, short, glossy, black hair. Its nose is long and pointed, resembling that of a hog, but much longer. Its eyes are so small that it is scarcely possible to discern them. Instead of ears, it has only holes in the place. Its neck is so short, that the head seems stuck upon the shoulders. The body is thick and round, terminating by a very small short tail; and its legs also are so very short, that the animal seems to lie flat on its belly. From under its belly, as it rests in this position, the four feet appear just as if they immediately grew out of the body. Thus the animal appears to us at first view as a mass of flesh covered with a fine shining black skin, with a little head, and scarce any legs, eyes, or tail. On a closer inspection, however, two little black points may be discerned, that are its eyes. The ancients, and some of the moderns, were of opinion that the animal was utterly blind; but Derham, by the help of a microscope, plainly discovered all the parts of the eye that are known in other animals, such as the pupil, the vitreous and crystalline humours. The fore-legs appear very short and strong, and furnished with five claws to each. These are turned outwards and backwards, as the hands of a man when swimming. The hind-legs are longer and weaker than the fore, being only used to assist its motions; whereas, the others are continually employed in digging. The teeth are like those of a shrew mouse, and there are five on both sides of the upper jaw, which stand

[* The mole has six unequal fore-teeth in the upper jaw, and eight in the lower; one tusk on each side in both jaws; seven grinders on each side above, and six below.]

out; but those behind are divided into points. The tongue is as large as the mouth will hold.

Such is the extraordinary figure and formation of this animal; which if we compare with its manner of living, we shall find a manifest attention in nature to adapt the one to the other.* As it is allotted a subterraneous abode, the seeming defects of its formation vanish, or rather are turned to its advantage. The breadth, strength, and shortness of the fore-feet, which are inclined outwards, answer the purposes of digging, serving to throw back the earth with greater ease, and to pursue the worms and insects which are its prey: had they been longer, the falling in of the earth would have prevented the quick repetition of its strokes in working; or have obliged it to make a large hole, in order to give room for their exertion. The form of the body is not less admirably contrived for its way of life. The fore part is thick, and very muscular, giving great strength to the action of the fore-feet, enabling it to dig its way with amazing force and rapidity, either to pursue its prey, or elude the search of the most active enemy. By its power of boring the earth, it quickly gets below the surface; and I have seen it, when let loose in the midst of a field, like the ghost on a theatre, instantly sink into the earth; and the most active labourer, with a spade, in vain attempted to pursue.

The smallness of its eyes, which induced the ancients to think it was blind, is, to this animal, a peculiar advantage. A small degree of vision is sufficient for a creature that is ever destined to live in darkness. A more extensive sight would only have served to show the horrors of its prison, while nature had denied it the means of an escape. Had this organ been larger, it would have been perpetu-

* British Zoology.

ally liable to injuries, by the falling of the earth into it; but nature to prevent that inconvenience, has not only made them very small, but very closely covered them with hair. Anatomists mention, besides these advantages, another that contributes to their security; namely, a certain muscle, by which the animal can draw back the eye whenever it is necessary or in danger.

As the eye is thus perfectly fitted to the animal's situation, so also are the senses of hearing and smelling. The first gives it notice of the most distant appearance of danger; the other directs it, in the midst of darkness, to its food. The wants of a subterraneous animal can be but few; and these are sufficient to supply them: to eat, and to produce its kind, are the whole employment of such a life; and for both these purposes it is wonderfully adapted by nature.*

Thus admirably is this animal fitted for a life of darkness and solitude; with no appetites but what it can easily indulge, with no enemies but what it can easily evade or conquer. As soon as it has once buried itself in the earth, it seldom stirs out, unless forced by violent rains in summer, or when, in pursuit of its prey, it happens to come too near the surface, and thus gets into the open air, which may be considered as its unnatural element. In general it chooses the looser softer grounds, beneath which it can travel with greater ease; in such also it generally finds the greatest number of worms and insects, upon which it chiefly preys. It is observed to be

* Testes habet maximos, parastatas amplissimas, novum corpus seminale ab his diversum ac separatum. Penem etiam facile omnium, ni fallor, animalium longissium, ex quibus colligere est maximam præ reliquis omnibus animalibus voluptatem in coitu, hoc abjectum et vile animalculum percipere, ut habeant quod ipsi invideant qui in hoc supremas vitæ suæ delicias collocant: Ray's Synops. Quadrup. p. 239. Huic opinioni assentitur D. Buffon, attamen non mihi apparet magnitudinem partium telem voluptatem augere. Maribus enim salacissimis contrarium obtinet.

most active, and to cast up most earth, immediately before rain, and in winter before a thaw: at those times the worms and insects begin to be in motion, and approach the surface, whither this industrious animal pursues them. On the contrary, in very dry weather the mole seldom or never forms any hillocks; for then it is obliged to penetrate deeper after its prey, which at such seasons retire far into the ground.

As the moles very seldom come above ground,* they have but few enemies; and very readily evade the pursuit of animals stronger and swifter than themselves. Their greatest calamity is an inundation; which, whenever it happens, they are seen in numbers attempting to save themselves by swimming, and using every effort to reach the higher grounds. The greatest part, however, perish, as well as their young, which remain in the holes behind. Were it not for such accidents, from their great fecundity they would become extremely troublesome; and, as it is, in some places they are considered by the farmer as his greatest pest. They couple towards the approach of spring; and their young are found about the beginning of May. They generally have four or five at a time; and it is easy to distinguish among other mole-hills, that in which the female has brought forth her young. These are made with much greater art than the rest, and are usually larger. The female, in order to form this retreat, begins by erecting the earth into a tolerably spacious apartment, which is supported within by partitions, at proper distances, that prevent the roof from falling. All round this she works, and beats the earth very firm, so as to make it capable of keeping out the rain, let it be never so violent. As the hillock in which this apartment is thus formed, is raised above ground, the apartment itself is consequently above the level of

* Buffon.

the plain, and therefore less subject to accidental slight inundations. The place being thus fitted, she then procures grass and dry leaves, as a bed for her young. There they lie secure from wet, and she continues to make their retreat equally so from danger; for all around this hill of her own raising, are holes running into the earth, that part from the middle apartment, like rays from a centre, and extend about fifteen feet in every direction; these resemble so many walks or chases, into which the animal makes her subterraneous excursions, and supplies her young with such roots or insects as she can provide; but they contribute still more to the general safety; for as the mole is very quick of hearing, the instant she perceives her little habitation attacked, she takes to her burrow, and unless the earth be dug away by several men at once, she and her young always make a good retreat.

The mole is scarcely found except in cultivated countries: the varieties are but few. That which is found in Virginia resembles the common mole, except in colour, which is black, mixed with a deep purple. There are sometimes white moles seen, particularly in Poland, rather larger than the former. As their skin is so very soft and beautiful, it is odd that it has not been turned to any advantage. Agricola tells us, that he saw hats made from it, the finest and the most beautiful that could be imagined.

CHAPTER II.

OF ANIMALS OF THE HEDGEHOG, OR PRICKLY KIND.

ANIMALS of the Hedgehog kind require but very little accuracy to distinguish them from all others.

That hair which serves the generality of quadrupeds for warmth and ornament, is partly wanting in these, while its place is supplied by sharp spines or prickles that serve for their defence. This general characteristic, therefore, makes a much more obvious distinction than any that can be taken from their teeth or their claws.* Nature, by this extraordinary peculiarity, seems to have separated them in a very distinguished manner; so that instead of classing the hedgehog among the moles, or the porcupine with the hare, as some have done, it is much more natural and obvious to place them, and others approaching them in this strange peculiarity, in a class by themselves: nor let it be supposed, that while I thus alter their arrangement, and separate them from animals with which they have been formerly combined, that I am destroying any secret affinities that exist in nature. It is natural, indeed, for readers to suppose, when they see two such opposite animals as the hare and the porcupine assembled together in the same group, that there must be some material reason, some secret connexion, for thus joining animals so little resembling each other in appearance. But the reasons for this union were very slight, and merely arose from a similitude in the fore-teeth: no likeness in the internal conformation; no similitude in nature, in habitudes, or disposition; in short, nothing to fasten the link that combines them, but the similitude in the teeth; this, therefore, may be easily dispensed with; and, as was said, it will be most proper to class them according to their most striking similitudes.

The hedgehog, with an appearance the most formidable, is yet one of the most harmless animals in

[* These have two fore-teeth in the upper jaw, at a considerable distance from one another, and two in the under jaw, less distant: they have eight grinders in each jaw, and recumbent dog-teeth on each side.]

the world: unable or unwilling to offend, all its precautions are only directed to its own security; and it is armed with a thousand points, to keep off the enemy, but not to invade him. While other creatures trust to their force, their cunning, or their swiftness, this animal, destitute of all, has but one expedient for safety; and from this alone it often finds protection. As soon as it perceives itself attacked, it withdraws all its vulnerable parts, rolls itself into a ball, and presents nothing but its defensive thorns to the enemy: thus, while it attempts to injure no other quadruped, they are equally incapable of injuring it; like those knights we have somewhere read of, who were armed in such a manner, that they could neither conquer others, nor be themselves overcome.

This animal is of two kinds; one with a nose like the snout of a hog; the other more short and blunt, like that of a dog. That with the muzzle of a dog is the most common, being about six inches in length from the tip of the nose to the insertion of the tail. The tail is little more than an inch long; and so concealed by the spines as to be scarcely visible: the head, back, and sides, are covered with prickles, the nose, breast, and belly, are covered with fine soft hair;* the legs are short, of a dusky colour, and almost bare; the toes on each foot are five in number, long and separated; the prickles are about an inch in length, and very sharp pointed; their lower part is white, the middle black, and the points white: the eyes are small, and placed high in the head; the ears are round, pretty large, and naked; the mouth is small, but well furnished with teeth; these, however, it only uses in chewing its food, but neither in attacking or defending itself against other animals. Its only reliance, in case of danger, is on its spines:

* Præputium propendens. Linnæi Syst. 75. And of the female he might have said, resupina copulatur.

the instant it perceives an enemy, it puts itself into a posture of defence, and keeps upon its guard until it supposes the danger over. On such occasions, it immediately alters its whole appearance: from its usual form, somewhat resembling a small animal with a bunch on its back, the animal begins to bend its back, to lay its head upon its breast, to shut its eyes, to roll down the skin of its sides towards the legs, to draw these up, and, lastly, to tuck them in on every side, by drawing the skin still closer. In this form, which the hedgehog always puts on when disturbed, it no way resembles an animal, but rather a roundish mass of prickles impervious on every side. The shape of the animal thus rolled up, somewhat resembles a chesnut in the husk; there being, on one side, a kind of flat space, which is that on which the head and legs have been tucked in.

Such is the usual appearance of the hedgehog upon the approach of any danger. Thus rolled up in a lump, it patiently waits till its enemy passes by, or is fatigued with fruitless attempts to annoy it. The cat, the weasel, the ferret, and the martin, quickly decline the combat; and the dog himself generally spends his time in empty menaces, rather than in effectual efforts. Every increase of danger only increases the animal's precautions to keep on its guard; its assailant vainly attempts to bite, since he thus more frequently feels than inflicts a wound; he stands enraged and barking, and rolls it along with his paws; still, however, the hedgehog patiently submits to every indignity, but continues secure; and still more to disgust its enemy with the contest, sheds its urine, the smell of which is alone sufficient to send him away. In this manner, the dog, after barking for some time, leaves the hedgehog where he found him; who, perceiving the danger past, at length peeps out from its ball, and if not interrupted, creeps slowly to its retreat.

The hedgehog, like most other wild animals, sleeps by day, and ventures out by night. It generally resides in small thickets, in hedges, or in ditches covered with bushes: there it makes a hole of about six or eight inches deep, and lies well wrapped up in moss, grass, or leaves. Its food is roots, fruits, worms, and insects. It is also said to suck cattle, and hurt their udders; but the smallness of its mouth will serve to clear it from this reproach. It is said also to be very hurtful in gardens and orchards, where it will roll itself in a heap of fruit, and so carry a large quantity away upon its prickles; but this imputation is as ill grounded as the former, since the spines are so disposed that no fruit will stick upon them, even if we should try to fix them on. It rather appears to be a very serviceable animal, in ridding our fields of insects and worms, which are so prejudicial to vegetation.

M. Buffon, who kept these animals tame about his house, acquits them of the reproach of being mischievous in the garden; but then he accuses them of tricks, of which, from the form and habits of this animal, one would never be led to suspect them. "I have often," says he, "had the female and her young brought me about the beginning of June; they are generally from three to five in number; they are white in the beginning, and only the marks of their spines appear. I was willing to rear some of them, and accordingly put the dam and her young into a tub, with abundant provision beside them; but the old animal, instead of suckling her young, devoured them all, one after another. On another occasion, a hedgehog that had made its way into the kitchen, discovered a little pot, in which there was meat prepared for boiling; the mischievous animal drew out the meat, and left its excrements in the stead. I kept males and females in

the same apartment, where they lived together, but never coupled. I permitted several of them to go about my garden; they did very little damage, and it was scarcely perceivable that they were there: they lived upon the fruits that fell from the trees; they dug the earth into shallow holes; they eat caterpillars, beetles, and worms; they were also very fond of flesh, which they devoured boiled or raw."

They couple in spring, and bring forth about the beginning of summer. They sleep during the winter; and what is said of their laying up provisions for that season is consequently false. They at no time eat much, and can remain very long without any food whatsoever. Their blood is cold, like all other animals that sleep during the winter. Their flesh is not good for food; and their skins are converted to scarcely any use, except to muzzle calves, to keep them from sucking.

THE TANREC AND TENDRAC.

The Tanrac and Tendrac are two little animals described by M. Buffon, of the hedgehog kind, but yet sufficiently different from it to constitute a different species. Like the hedgehog, they are covered with prickles, though mixed in a greater proportion with hair; but unlike that animal, they do not defend themselves by rolling up in a ball. Their wanting this last property is alone sufficient to distinguish them from an animal in which it makes the most striking peculiarity; as also that in the East Indies, where only they are found, the hedgehog exists separately also—a manifest proof that this animal is not a variety caused by the climate.

The Tanrec is much less than the hedgehog,* being about the size of a mole, and covered with prickles, like that animal, except that they are shorter and smaller. The Tendrac is still less than the former, and is defended only with prickles upon the head, the neck and the shoulders, the rest being covered with a coarse hair resembling a hog's bristles. These little animals, whose legs are very short, move but slowly. They grunt like a hog; and wallow, like it, in the mire. They love to be near water, and spend more of their time there than upon land. They are chiefly in creeks and harbours of salt water. They multiply in great numbers, make themselves holes in the ground, and sleep for several months. During this torpid state, their hairs (and I should also suppose their prickles) fall, and they are renewed upon their revival. They are usually very fat, and although their flesh be insipid, soft, and stringy, yet the Indians find it to their taste, and consider it as a very great delicacy.

THE PORCUPINE.

THOSE arms which the hedgehog possesses in miniature, the Porcupine has in a more enlarged degree. The short prickles of the hedgehog are in this animal converted into shafts. In the one, the spines are about an inch long; in the other, a foot, The porcupine is about two feet long, and fifteen inches high. Like the hedgehog, it appears a mass of misshapen flesh, covered with quills, from ten to fourteen inches long, resembling the barrel of a goose-quill in thickness, but tapering and sharp at

* Buffon, vol. xxv. p. 254.

both ends.* These, whether considered separately or together, afford sufficient subject to detain curiosity. Each quill is thickest in the middle, and inserted into the animal's skin, in the same manner as feathers are found to grow upon birds. It is within side spongy, like the top of a goose-quill; and of different colours, being white and black alternately, from one end to the other. The biggest are often found fifteen inches long, and a quarter of an inch in diameter; extremely sharp, and capable of inflicting a mortal wound. They seem harder than common quills, being difficult to be cut, and solid at that end which is not fixed in the skin. If we examine them in common, as they grow upon the animal, they appear of two kinds; the one such as I have already described, the other long, flexible, and slender, growing here and there among the former. There is still another sort of quills, that grow near the tail, white and transparent, like writing quills, and that seem to be cut short at the end All these quills, of whatever kind, incline backwards, like the bristles of a hog; but when the animal is irritated, they rise and stand upright, as bristles are seen to do.

Such is the formation of this quadruped in those parts in which it differs from most others: as to the rest of its figure, the muzzle bears some resemblance to that of a hare, but black: the legs are very short, and the feet have five toes, both before and behind; and these, as well as the belly, the head, and all other parts of the body are covered with a sort of short hair, like prickles, there being no part, except the ears and the sole of the foot, that is free from them; the ears are thinly covered with very fine hair,

[* This animal has two fore-teeth obliquely divided both in the upper and under jaws, besides eight grinders; and the body is covered with quills or prickles. It has four toes on the fore-feet, five on the hind-feet, a crested head, a short tail, and the upper lip is divided like that of a hare.

and are in shape like those of mankind; the eyes are small, like those of a hog, being only one-third of an inch from one corner to the other. After the skin is taken off, there appears a kind of paps on those parts of the body from whence the large quills proceed; these are about the size of a small pea, each answering to as many holes which appear on the outward surface of the skin, and which are about half an inch deep, like as many hollow pipes, wherein the quills are fixed as in so many sheaths.

This animal seems to partake very much of the nature of the hedgehog, having this formidable apparatus of arms, rather to defend itself than annoy the enemy. There have been, indeed many naturalists who supposed that it was capable of discharging them at its foes, and killing at a great distance off. But this opinion has been entirely discredited of late; and it is now universally believed that its quills remain firmly fixed in the skin, and are then only shed when the animal moults them, as birds do their feathers. It is true we are told by Ellis, that a wolf at Hudson's Bay was found dead, with the quills of a porcupine fixed within its mouth; which might have very well happened, from the voraciousness of the former, and not the resentment of the latter. That rapacious creature, in the rage of appetite, might have attempted to devour the porcupine, quills and all, and very probably paid the forfeit by its life. However this be, of all the porcupines that have been brought into Europe, not one was ever seen to launch their quills; and yet the irritations they received were sufficient to have provoked their utmost indignation. Of all the porcupines that Dr. Shaw observed in Africa, and, he saw numbers, not one ever attempted to dart its quills; their usual manner of defence being to lie on one side, and when the enemy approaches very near, by sud-

denly rising, to wound him with the points on the other.

It is probable, therefore, that the porcupine is seldom the agressor, and when attacked by the bolder animals, it only directs its quills so as to keep always pointing towards the enemy. These are an ample protection, and, as we are assured by Kolben, at such times even the lion himself will not venture to make an attack. From such, therefore, the porcupine can defend itself; and chiefly hunts for serpents, and all other reptiles, for subsistence. Travellers universally assure us, that between the serpent and the porcupine there exists an irreconcileable enmity, and that they never meet without a mortal engagement.* The porcupine, on these occasions, is said to roll itself upon the serpent, and thus destroy and devour it. This may be true; while what we are informed by Monsieur Sarrasin, of the porcupine of Canada chiefly subsisting on vegetables, may be equally so. Those which are brought to this country to be shown, are usually fed on bread, milk, and fruits; but they will not refuse meat when it is offered them; and it is probable they prefer it in a wild state, when it is to be had.† The porcupine is also known to be extremely hurtful to gardens, and where it enters does incredible damage.

The Americans, who hunt this animal, assure us that the porcupine lives from twelve to fifteen years. During the time of coupling, which is in the month of September, the males become very fierce and dangerous, and often are seen to destroy each other with their teeth. The female goes with young seven months, and brings forth but one at a time; this she suckles but about a month, and accustoms it betimes to live, like herself, upon vegetables and the bark of trees: she is very fierce in its defence; but at other

* Bosman; Smith; L. P.; Vincent Marie, &c. † Buffon.

seasons she is fearful, timid, and harmless. The porcupine never attempts to bite, nor any way to injure its pursuers: if hunted by a dog, or a wolf, it instantly climbs up a tree, and continues there until it has wearied out the patience of its adversary: the wolf knows by experience how fruitless it would be to wait; he therefore leaves the porcupine above, and seeks out for a new adventure.

The porcupine does not escape so well from the Indian hunter, who eagerly pursues it, in order to make embroidery of its quills, and to eat its flesh. This, as we are commonly told, is very tolerable eating; however, we may expect wretched provisions when the savages are to be our caterers, for they eat every thing that has life. But they are very ingenious with regard to their embroidery: if I understand the accounts rightly, they dye the quills of various colours, and then splitting them into slips, as we see in the making of a cane chair, they embroider with these their belts, baskets, and several other necessary pieces of furniture.

As to the rest, there are many things related concerning this animal that are fabulous; but there are still many circumstances more that yet remain to be known. It were curious to inquire whether this animal moults its quills when wild, for it is never seen to shed them in a domestic state; whether it sleeps all the winter, as we are told by some naturalists, which we are sure it does not when brought into our country; and, lastly, whether its quills can be sent off with a shake, for no less a naturalist than Reaumur was of that opinion.

All that we can learn of an animal exposed as a show, or even by its dissection, is but merely its conformation; and that makes one of the least interesting parts of its history. We are naturally led, when presented with an extraordinary creature, to expect

something extraordinary in its way of living, something uncommon, and corresponding with its figure; but of this animal we know little with any precision, except what it offers in a state of captivity. In such a situation, that which I saw appeared to very little advantage; it was extremely dull and torpid, though very wakeful; and extremely voracious, though very capable of sustaining hunger; as averse to any attachment as to being tamed: it was kept in an iron cage, and the touching one of the bars was sufficient to excite its resentment, for its quills were instantly erected; and the poet was right in his epithet of *fretful*, for it appeared to be the most irascible creature upon earth.

The porcupines of America differ very much from that of the ancient continent, which we have been describing; and, strictly speaking, may be considered as animals of a different species: however, from their being covered with quills, we will only add them as varieties of the former, since we know very little concerning them, except their difference of figure. They are of two kinds; the one called the *Couando*, and the other, first named by M. Buffon, the *Urson:* the one a native of the northern parts of America, the other of the south; and both differing from the former in having long tails, whereas that has a very short one.

The Couando is much less than the porcupine; its quills are one-fourth the length, its snout more unlike that of a hare; its tail is long enough to catch by the branches of trees, and hold by them. It may be easily tamed, and is to be found chiefly in the southern parts of America, yet is not wanting also in the northern.

The Urson, which M. Buffon calls after our countryman Hudson, is a native of Hudson's Bay. The make of the body of this animal is not so round as

that of the two former, but somewhat resembling the shape of a pig. It is covered with long bristly hair, with a shorter hair underneath, and under this the quills lie concealed very thick; they are white with a brown point, and bearded, and the longest do not exceed four inches; they stick to the hand when the animal is stroked on the back; and likewise when the hand is taken away, they stick so fast as to follow it. They make their nest under the roots of great trees, sleep very much, and chiefly feed upon the bark of the juniper. In winter the snow serves them for drink, and in summer they lap water like a dog. They are very common in the country lying to the east of Hudson's Bay; and several of the trading Americans depend on them for food at some seasons of the year.

CHAPTER III.

OF QUADRUPEDS COVERED WITH SCALES OR SHELLS INSTEAD OF HAIR.*

WHEN we talk of a quadruped, the name seems to imply an animal covered with hair; when we mention a bird, it is natural to conceive a creature covered with feathers; when we hear of a fish, its scales are generally the first part that strikes our imagination. Nature, however, owns none of our distinctions; various in all her operations, she mixes her plans, groups her pictures, and excites our wonder as well by her general laws as by her deviations. Quadrupeds, which we have considered as making the first general class in animated nature, and, next

* This chapter is chiefly extracted from M. Buffon, which I mention at once, to save the trouble of repeated quotation.

to man, the most dignified tenants of the earth, are yet in many respects related to the classes beneath them, and do not in every respect preserve their usual distinctions. Their first character, which consists in having four feet, is common to the lizard kind as well as to them. The second prerogative, which is that of bringing forth living young, is found in the cetaceous tribe of fishes, and also in insects without number. Their third and last attribute, which seems more general and constant than the former, that of being covered with hair, is yet found in various other animals, and is deficient in quadrupeds themselves. Thus we must be cautious of judging of the nature of animals from one single character, which is always found incomplete; for it often happens that three or four of the most general characters will not suffice. It must be by a general enumeration of the parts, that we can determine precisely of the works of the creation; and instead of definitions, learn to describe. Had this method been followed, much of the disgust and the intricacy of history might have been avoided, and that time which is now employed in combating error, laid out in the promoting of science.

Were we to judge of nature from definitions only, we should never be induced to suppose that there existed races of viviparous quadrupeds destitute of hair, and furnished with scales and shells in their stead. However, nature, every way various, supplies us with many instances of these extraordinary creatures; the old world has its quadrupeds covered with scales, and the new with a shell. In both they resemble each other, as well in the strangeness of their appetites as in their awkward conformation. Like animals but partially made up, and partaking of different natures, they want those instincts which animals formed but for one element alone are found

Engd by G. B. Ellis.

1. Great Fernal Bat _ 2. Tamanoir _ 3. Pangolin
4. Armadillo.

to possess. They seem to be a kind of strangers in nature, creatures taken from some other element, and capriciously thrown to find a precarious subsistence upon land.

THE PANGOLIN.

The Pangolin,* which has been usually called the *Scaly Lizard*, M. Buffon very judiciously restores to that denomination by which it is known in the countries where it is found. The calling it a lizard, he justly observes, might be apt to produce error, and occasion its being confounded with an animal which it resembles only in its general form, and in its being covered with scales. The lizard may be considered as a reptile produced from an egg; the pangolin is a quadruped, and brought forth alive, and perfectly formed. The lizard is all over covered with the marks of scales; the pangolin has scales neither on the throat, the breast, nor the belly. The scales of the lizard seem stuck upon the body even closer than those of fishes; the scales of the pangolin are only fixed at one end, and capable of being erected, like those of the porcupine, at the will of the animal. The lizard is a defenceless creature; the pangolin can roll itself into a ball, like the hedgehog, and presents the points of its scales to the enemy, which effectually defend it.

The pangolin, which is a native of the torrid climates of the ancient continent, is of all other animals the best protected from external injury by nature. It is about three or four feet long, or, taking

[* This animal has no teeth either in the upper or under jaw; the tongue is long and cylindrical; the snout, long and narrow, and the body is covered with hard scales.]

in the tail, from six to eight. Like the lizard, it has a small head, a very long nose, a short thick neck, a long body, legs very short, and a tail extremely long, thick at the insertion, and terminating in a point. It has no teeth, but is armed with five toes on each foot, with long white claws. But what it is chiefly distinguished by is its scaly covering, which in some measure hides all the proportions of its body. These scales defend the animal on all parts, except the under part of the head and neck, under the shoulders, the breast, the belly, and the inner side of the legs; all which parts are covered with a smooth soft skin, without hair. Between the shells of this animal, at all the interstices, are seen hairs like bristles, brown at the extremity, and yellow towards the root. The scales of this extraordinary creature are of different sizes and different forms, and stuck upon the body somewhat like the leaves of an artichoke. The largest are found near the tail, which is covered with them like the rest of the body. These are above three inches broad, and about two inches long, thick in the middle, and sharp at the edges, and terminated in a roundish point. They are extremely hard, and their substance resembles that of horn. They are convex on the outside, and a little concave on the inner; one edge sticks in the skin, while the other laps over that immediately behind it. Those that cover the tail conform to the shape of that part, being of a dusky brown colour, and so hard, when the animal has acquired its full growth, as to turn a musket-ball.

Thus armed, this animal fears nothing from the efforts of all other creatures except man. The instant it perceives the approach of an enemy, it rolls itself up like the hedgehog, and presents no part but the cutting edges of its scales to the assailant. Its long tail, which at first view, might be thought easily

separable, serves still more to increase the animal's security. This is lapped round the rest of the body, and, being defended with shells even more cutting than any other part, the creature continues in perfect security. Its shells are so large, so thick, and so pointed, that they repel every animal of prey; they make a coat of armour that wounds while it resists, and at once protects and threatens. The most cruel, the most famished quadruped of the forest, the tiger, the panther, and the hyæna, make vain attempts to force it. They tread upon, they roll it about, but all to no purpose; the pangolin remains safe within, while its invader almost always feels the reward of its rashness. The fox often destroys the hedgehog by pressing it with his weight, and thus obliges it to put forth its nose, which he instantly seizes, and soon after the whole body; but the scales of the pangolin effectually support it under any such weight, while nothing that the strongest animals are capable of doing, can compel it to surrender. Man alone seems furnished with arms to conquer its obstinacy: The Negroes of Africa, when they find it, beat it to death with clubs, and consider its flesh as a very great delicacy.

But although this animal be so formidable in its appearance, there cannot be a more harmless inoffensive creature when unmolested. It is even unqualified by nature to injure larger animals, if it had the disposition, for it has no teeth. It should seem that the bony matter which goes in other animals to supply the teeth, is exhausted in this in supplying the scales that go to the covering of its body. However this be, its life seems correspondent to its peculiar conformation. Incapable of being carnivorous, since it has no teeth, nor of subsisting on vegetables, which require much chewing, it lives entirely upon insects, for which nature has fitted it in a very extraordinary manner. As it has a long nose, so it may naturally

be supposed to have a long tongue; but, to increase its length still more, it is doubled in the mouth, so that when extended, it is shot out to above a quarter of a yard beyond the tip of the nose. This tongue is round, extremely red, and covered with an unctuous and slimy liquor, which gives it a shining hue. When the pangolin, therefore, approaches an ant-hill, for these are the insects on which it chiefly feeds, it lies down near it, concealing as much as possible the place of its retreat, and stretching out its long tongue among the ants, keeps it for some time quite immoveable. These little animals, allured by its appearance, and the unctuous substance with which it is smeared, instantly gather upon it in great numbers; and when the pangolin supposes a sufficiency, it quickly withdraws the tongue, and swallows them at once. This peculiar manner of hunting for its prey is repeated either till it be satisfied, or till the ants, grown more cautious, will be allured to their destruction no longer. It is against these noxious insects, therefore, that its only force or cunning is exerted; and were the Negroes but sufficiently sensible of its utility in destroying one of the greatest pests to their country, they would not be so eager to kill it. But it is the nature of savage men to pursue the immediate good, without being solicitous about the more distant benefit they remove. They, therefore, hunt this animal with the utmost avidity for its flesh; and, as it is slow and unable to escape in an open place, they seldom fail of destroying it. However, it chiefly keeps in the most obscure parts of the forest, and digs itself a retreat in the clefts of rocks, where it brings forth its young; so that it is but rarely met with, and continues a solitary species, and an extraordinary instance of the varying of nature.

Of this animal, there is a variety which is called the Phatagin, much less than the former, being not

above a foot long from the head to the tail, with shells differently formed, with its belly, breast, and throat covered with hair, instead of a smooth skin as in the former; but that by which it is peculiarly distinguished is the extent of its tail, which is above twice the length of its body. Both are found in the warm latitudes of the East, as well as in Africa; and, as their numbers are but few, it is to be supposed their fecundity is not great.

THE ARMADILLO OR TATOU.

HAVING mentioned quadrupeds of the ancient continent covered with scales, we come next to quadrupeds of the new continent covered with shells. It would seem that nature had reserved all the wonders of her power for these remote and thinly inhabited countries, where the men are savage, and the quadrupeds various. It would seem that she becomes more extraordinary in proportion as she retires from human inspection. But the real fact is, that wherever mankind are polished, or thickly planted, they soon rid the earth of these odd and half-formed productions, that in some measure encumber the soil. They soon disappear in a cultivated country, and continue to exist only in those remote deserts where they have no enemies but such as they are enabled to oppose.

The Armadillo is chiefly an inhabitant of South America; a peaceful harmless creature, incapable of offending any other quadruped, and furnished with a peculiar covering for its own defence.* The

[* These animals have grinders, but neither fore-teeth nor dog-teeth; they are covered with a hard bony shell, intersected with distinct moveable zones or belts.]

pangolin, described above, seems an inactive helpless being, indebted for safety more to its patience than its power; but the armadillo is still more exposed and helpless. The pangolin is furnished with an armour that wounds while it resists, and that is never attacked with impunity; but the armadillo is obliged to submit to every insult, without any power of repelling its enemy; it is attacked without danger, and is consequently liable to more various persecutions.

This animal being covered, like a tortoise, with a shell, or rather a number of shells, its other proportions are not easily discerned. It appears, at first view, a round misshapen mass, with a long head, and a very large tail sticking out at either end, as if not of a piece with the rest of the body. It is of different sizes, from a foot to three feet long, and covered with a shell divided into several pieces, that lap over each other like the plates in a coat of armour, or in the tail of a lobster. The difference in the size of this animal, and also the different disposition and number of its plates, have been considered as constituting so many species, each marked with its own particular name. In all, however, the animal is partially covered with this natural coat of mail; the conformation of which affords one of the most striking curiosities in natural history. This shell, which in every respect resembles a bony substance, covers the head, the neck, the back, the sides, the rump, and the tail to the very point. The only parts to which it does not extend are, the throat, the breast, and the belly, which are covered with a white soft skin, somewhat resembling that of a fowl stripped of its feathers. If these naked parts be observed with attention, they will be found covered with the rudiments of shells, of the same substance with those which cover the back. The skin,

even in the parts that are softest, seems to have a tendency to ossify; but a complete ossification takes place only on those parts which have the least friction, and are the most exposed to the weather. The shell, which covers the upper part of the body, differs from that of the tortoise, in being composed of more pieces than one, which lie in bands over the body, and, as in the tail of the lobster, slide over each other, and are connected by a yellow membrane in the same manner. By this means the animal has a motion in its back, and the armour gives way to its necessary inflexions. These bands are of various numbers and sizes, and from them these animals have been distinguished into various kinds. In general, however, there are two large pieces that cover, one the shoulders, and the other the rump. In the back, between these, the bands are placed in different numbers that lap over each other, and give play to the whole. Besides their opening crosswise, they also open down along the back, so that the animal can move in every direction. In some there are but three of these bands between the large pieces; in others there are six; in a third kind there are eight; in a fourth kind nine; in a fifth kind twelve; and, lastly, in the sixth kind there is but one large piece which covers the shoulders, and the rest of the body is covered with bands all down to the tail. These shells are differently coloured in different kinds, but most usually they are of a dirty gray. This colour in all arises from another peculiar circumstance in their conformation, for the shell itself is covered with a softish skin, which is smooth and transparent.

But although these shells might easily defend this animal from a feeble enemy, yet they could make but a slight resistance against a more powerful antagonist; nature, therefore, has given the armadillo

the same method of protecting itself with the hedgehog or the pangolin. The instant it perceives itself attacked, it withdraws the head under its shells, and lets nothing be seen but the tip of the nose: if the danger increase, the animal's precautions increase in proportion; it then tucks up its feet under its belly, unites its two extremities together, while the tail seems as a band to strengthen the connexion; and it thus becomes like a ball, a little flattish on each side. In this position it continues obstinately fixed while the danger is near, and often long after it is over. In this situation it is tossed about at the pleasure of every other quadruped, and very little resembling a creature endowed with life and motion. Whenever the Indians take it, which is in this form, by laying it close to the fire they soon oblige the poor animal to unfold itself, and to face a milder death to escape a more severe.

This animal is a native only of America, for they were utterly unknown before the discovery of that continent. It is an inoffensive, harmless creature, unless it finds the way into a garden, where it does a great deal of mischief, by eating the melons, the potatoes, and other vegetables. Although a native of the warmest parts of America, yet it bears the cold of our climate without any inconvenience. We have often seen them shown among other wild beasts, which is a proof they are not difficult to be brought over. Their motion seems to be a swift walk, but they can neither run, leap, nor climb trees; so that if found in an open place, they have no method of escaping from their pursuers. Their only resource in such an extremity is to make towards their hole as fast as they can; or, if this be impracticable, to make a new hole before the enemy arrives. For this they require but a very few moments advantage; the mole itself does not burrow swifter than they can. For

this purpose they are furnished with claws extremely large, strong, and crooked, and usually four upon each foot. They are sometimes caught by the tail as they are making their way into the earth; but such is their resistance, and so difficult is it to draw them backward, that they leave their tail in the hand of their pursuer, and are very well contented to save their lives with its loss. The pursuers, sensible of this, never drag the tail with all their force, but hold it while another digs the ground about them; and thus these animals are taken alive. The instant the armadillo perceives itself in the power of its enemies, it has but one last resource, to roll itself up, and thus patiently wait whatever tortures they think proper to inflict. The flesh of the smaller kinds is said to be delicate eating, so that we may suppose they receive no mercy. For this reason they are pursued with unceasing industry; and, although they burrow very deep in the earth, there have been many expedients used to force them out. The hunters sometimes contrive to fill the hole with smoke, which is often successful; they at other times force it by pouring in water. They also bring up a small kind of dogs to the chase, that quickly overtake them, if at any distance from their burrow, and oblige them to roll themselves up in a ball, in which figure the hunters carry them home. If, however, the armadillo be near a precipice, it often escapes, by rolling itself up, and then tumbling down from rock to rock, without the least danger or inconvenience. They are sometimes taken in snares laid for them by the sides of rivers and low moist places, which they particularly frequent; and this method, in general, succeeds better than any of the former, as their burrows are very deep, and they seldom stir out, except in the night. At no time are they found at any great distance from their retreats, so that it requires some patience and skill to intercept their retreat.

There are scarcely any of these that do not root the ground like a hog, in search of such roots as make a principal part of their food. They live also upon melons and other succulent vegetables, and all will eat flesh when they can get it. They frequent water and watery places, where they feed upon worms, small fish, and water insects. It is pretended that there is a kind of friendship between them and the rattlesnake, that they live peacably and commodiously together, and are frequently found in the same hole. This, however, may be a friendship of necessity to the armidillo; the rattle-snake takes possession of its retreats, which neither are willing to quit, while each is incapable of injuring the other.

As to the rest, these animals, though they all resemble each other in the general character of being clothed with a shell, yet differ a good deal in their size, and in the parts into which their shell is divided. The first of this kind, which has but three bands between the two large pieces that cover the back, is called the Tatu Apara. I will not enter into an exact description of its figure, which, how well written soever, no imagination could exactly conceive, and the reader would be more fatigued to understand than I to write it. The tail is shorter in this than any other kind, being not more than two inches long, while the shell, taking all the pieces together, is a foot long, and eight inches broad. The second is the Tatou of Ray, or the Encoubert of Buffon: this is distinguished from the rest by six bands across the back; it is about the size of a pig of a month old, with a small long head and a very long tail. The third is the Tatuette, furnished with eight bands, and not by a great deal so big as the former. Its tail is longer also, and its legs shorter in proportion. Its body, from the nose to the insertion of the tail is, about ten inches long, and the tail seven. The

fourth is the Pig-headed Armadillo, with nine bands. This is much larger than the former, being about two feet long from the nose to the tail. The fifth is the Kabassou, or Cataphractus, with twelve bands, and still bigger than the former, or any other of its kind. This is often found above three feet long, but is never eaten as the rest are. The sixth is the Weasel-headed Armadillo, with eighteen bands, with a large piece before, and nothing but bands backward. This is above a foot long, and the tail five inches. Of all these, the Kabassou and the Encoubert are the largest; the rest are of a much smaller kind. In the larger kinds, the shell is much more solid than in the others, and the flesh is much harder, and unfit for the table. These are generally seen to reside in dry upland grounds, while the small species are always found in moist places, and in the neighbourhood of brooks and rivers. They all roll themselves into a ball; but those whose bands are fewest in number are least capable of covering themselves up completely. The Tatu Apara, for instance, when rolled up, presents two great interstices between its bands, by which it is very easily vulnerable, even by the feeblest of quadrupeds.

CHAPTER IV.

ANIMALS OF THE BAT KIND.

HAVING in the last chapter described a race of animals that unite the boundaries between quadrupeds and insects, I come in this to a very different class, that serve to fill up the chasm between quadrupeds and birds. Some naturalists, indeed, have found animals of the bat kind so much partaking

of the nature of both, that they have been at a loss in which rank to place them, and have doubted, in giving the history of the bat, whether it was a beast or a bird they were describing. These doubts, however, no longer exist; they are now universally made to take their place among quadrupeds; to which their bringing forth their young alive, their hair, their teeth, as well as the rest of their habitudes and conformation, evidently entitle them.* Pliny, Gesner, and Aldrovandus, who placed them among birds, did not consider that they wanted every character of that order of animals, except the power of flying. Indeed, when this animal is seen with an awkward and struggling motion, supporting itself in the air at the dusk of the evening, it presents in some measure the appearance of a bird; but naturalists, whose business it is to examine it more closely, to watch its habitudes, and inspect into its formation, are inexcusable for concurring in the mistake.

The bat in scarcely any particular resembles the bird, except in its power of sustaining itself in the air. It brings forth its young alive; it suckles them; its mouth is furnished with teeth; its lungs are formed like those of quadrupeds; its intestines, and its skeleton, have a complete resemblance, and even are, in some measure, seen to resemble those of mankind.†

The bat most common in England, is about the size of a mouse; or nearly two inches and a half long The membranes that are usually called wings, are, properly speaking, an extension of the skin all round the body, except the head, which, when the animal flies, is kept stretched on every side by the four interior toes of the fore-feet, which are enor-

* In these animals, all the teeth are erect, pointed, and near each other, and the first four are equal. The fore-feet have the toes connected by a membrane, expanded into a kind of wings, by which they are enabled to fly.

† Penis propendens.

mously long, and serve like masts that keep the canvas of a sail spread, and regulate its motions.* The first toe is quite loose, and serves as a heel when the bat walks, or as a hook, when it would adhere to any thing. The hind-feet are disengaged from the surrounding skin, and divided into five toes, somewhat resembling those of a mouse. The skin by which it flies is of a dusky colour. The body is covered with a short fur, of a mouse colour, tinged with red. The eyes are very small; the ears like those of a mouse.

This species of the bat is very common in England. It makes its first appearance early in summer, and begins its flight in the dusk of the evening. It principally frequents the sides of woods, glades, and shady walks; and is frequently observed to skim along the surface of pieces of water. It pursues gnats, moths, and nocturnal insects of every kind. It feeds upon these; but will not refuse meat, wherever it can find it. Its flight is a laborious, irregular movement; and if it happens to be interrupted in its course, it cannot readily prepare for a second elevation; so that if it strikes against any object, and falls to the ground, it is usually taken. It appears only in the most pleasant evenings, when its prey is generally abroad, and flies in pursuit with its mouth open. At other times it continues in its retreat, the chink of a ruined building, or the hollow of a tree. Thus this little animal, even in summer, sleeps the greatest part of its time, never venturing out by daylight, nor in rainy weather; never hunting in quest of prey but for a small part of the night, and then returning to its hole. But its short life is still more abridged, by continuing in a torpid state during the winter. At the approach of the cold season, the bat prepares for its state of lifeless inactivity

* British Zoology.

and seems rather to choose a place where it may continue safe from interruption, than where it may be warmly or conveniently lodged. For this reason it is usually seen hanging by its hooked claws to the roofs of caves, regardless of the eternal damps that surround it. The bat seems the only animal that will venture to remain in these frightful subterranean abodes, where it continues in a torpid state, unaffected by every change of the weather. Such of this kind as are not provident enough to procure themselves a deep retreat, where the cold and heat seldom vary, are sometimes exposed to great inconveniences, for the weather often becomes so mild in the midst of winter as to warm them prematurely into life, and to allure them from their holes in quest of food, when nature has not provided a supply. These, therefore, have seldom strength to return; but, having exhausted themselves in a vain pursuit after insects which are not to be found, are destroyed by the owl, or any other animal that follows such petty prey.

The bat couples and brings forth in summer, generally from two to five at a time: of this I am certain, that I have found five young ones in a hole together, but whether they were the issue of one parent, I cannot tell. The female has but two nipples, and those forward on the breast, as in the human kind. This was a sufficient motive for Linnæus to give it the title of a Primas, to rank it in the same order with mankind, and to push this contemptible animal among the chiefs of the creation. Such arbitrary associations produce rather ridicule than instruction, and render even method contemptible: however, we are to forgive too strong an attachment to system in this able naturalist, since his application to the particular history of the animal counterbalances the defect.*

* Fauna Succia, p. 8.

From Linnæus we learn, that the female makes no nest for her young, as most birds and quadrupeds are known to do. She is barely content with the first hole she meets, where, sticking herself by her hooks against the sides of her apartment, she permits her young to hang at the nipple, and in this manner to continue for the first or second day. When, after some time, the dam begins to grow hungry, and finds a necessity of stirring abroad, she takes her little ones and sticks them to the wall, in the manner she before hung herself; there they immoveably cling, and patiently wait till her return.

Thus far this animal seems closely allied to the quadruped race. Its similitude to that of birds is less striking. As nature has furnished birds with extremely strong pectoral muscles, to move the wings, and direct their flight, so has it also furnished this animal. As birds also have their legs weak, and unfit for the purposes of motion, the bat has its legs fashioned in the same manner, and is never seen to walk, or more properly speaking to push itself forward with its hind-legs, but in cases of extreme necessity. The toes of the fore-legs, or, if we may use the expression, its extremely long fingers, extend the web like a membrane that lies between them; and this, which is extremely thin, serves to lift the little body into the air: in this manner, by an unceasing percussion, much swifter than that of birds, the animal continues, and directs its flight; however, the great labour required in flying soon fatigues it; for, unlike birds, which continue for days together upon the wing, the bat is tired in less than an hour, and then returns to its hole, satisfied with its supply, to enjoy the darkness of its retreat.

If we consider the bat as it is seen in our own country, we shall find it a harmless, inoffensive creature. It is true, that it now and then steals into a

larder, and, like a mouse, commits its petty thefts upon the fattest parts of the bacon. But this happens seldom; the general tenor of its industry is employed in pursuing insects that are much more noxious to us than itself can possibly be, while its evening flight, and its unsteady wabbling motion, amuse the imagination, and add one figure more to the pleasing group of animated nature.

The varieties of this animal, especially in our country, are but few, and the differences scarcely worth enumeration. Naturalists mention the Long-eared Bat, much less than that generally seen, and with much longer ears; the Horse-shoe Bat, with an odd protuberance round its upper lip, somewhat in the form of a horse-shoe; the Rhinoceros Bat, with a horn growing from the nose, somewhat similar to that animal from whence it has the name. These, with several others, whose varieties are too numerous, and differences too minute for a detail, are all inoffensive, minute, and contemptible; incapable, from their size, of injuring mankind, and, not sufficiently numerous, much to incommode him. But there is a larger race of bats, found in the East and West Indies, that are truly formidable: each of these is singly a dangerous enemy; but when they unite in flocks, they then become dreadful. Were the inhabitants of the African coasts,* says Des Marchais, to eat animals of the bat kind, as they do in the East Indies, they would never want a supply of provisions. They are there in such numbers, that when they fly they obscure the setting sun. In the morning, at peep of day, they are seen sticking upon the tops of the trees, and clinging to each other like bees when they swarm, or like large clusters of cocoa. The Europeans often amuse themselves with shooting among this huge mass of living creatures,

* Des Marchais, vol. ii, p. 208.

and observing their embarrassment when wounded. They sometimes enter the houses, and the Negroes are expert at killing them; but although these people seem for ever hungry, yet they regard the bat with horror, and will not eat it though ready to starve.

Of foreign bats, the largest we have any certain accounts of is the Rousette, or the Great Bat of Madagascar. This formidable creature is near four feet broad, when the wings are extended; and a foot long, from the tip of the nose to the insertion of the tail. It resembles our bat in the form of its wings, in its manner of flying, and in its internal conformation. It differs from it in its enormous size; in its colour, which is red, like that of a fox; in its head and nose also, which resemble those of that animal, and which have induced some to call it the flying fox; it differs also in the number of its teeth, and in having a claw on the fore-foot, which is wanting in ours. This formidable creature is found only in the ancient continent; particularly in Madagascar, along the coasts of Africa and Malabar, where it is usually seen about the size of a large hen. When they repose, they stick themselves to the tops of the tallest trees, and hang with their heads downward. But when they are in motion, nothing can be more formidable; they are seen in clouds, darkening the air, as well by day as by night, destroying the ripe fruits of the country, and sometimes settling upon animals, and man himself: they devour, indiscriminately, fruits, flesh, and insects, and drink the juice of the palm tree; they are heard at night in the forests at more than two miles distance, with a horrible din, but at the approach of day they usually begin to retire: nothing is safe from their depredations; they destroy fowls and domestic animals, unless preserved with the utmost care, and often fasten upon

the inhabitants themselves, attack them in the face, and inflict very terrible wounds. In short, as some have already observed, the ancients seem to have taken their ideas of harpies from these fierce and voracious creatures, as they both concur in many parts of the description, being equally deformed, greedy, uncleanly, and cruel.

An animal not so formidable, but still more mischievous than these is the American Vampyre. This is still less than the former; but more deformed, and still more numerous. It is furnished with a horn like the rhinoceros bat; and its ears are extremely long. The other kinds generally resort to the forest, and the most deserted places; but these come into towns and cities, and after sun-set, when they begin to fly, cover the streets like a canopy.* They are the common pest both of men and animals; they effectually destroy the one, and often distress the other. "They are," says Ulloa, "the most expert blood-letters in the world. The inhabitants of those warm latitudes being obliged by the excessive heats, to leave open the doors and windows of the chambers where they sleep, the vampyres enter, and if they find any part of the body exposed, they never fail to fasten upon it. There they continue to suck the blood; and it often happens that the person dies under the operation. They insinuate their tooth into a vein with all the art of the most experienced surgeon, continuing to exhaust the body, until they are satiated. I have been assured," continues he, "by persons of the strictest veracity, that such an accident has happened to them; and that, had they not providentially awaked, their sleep would have been their passage into eternity,—having lost so large a quantity of blood as hardly to find strength to bind up the orifice. The reason why the puncture is not

* Ulloa, vol. i, p. 58.

felt is, besides the great precaution with which it is made, the gentle refreshing agitation of the bat's wings, which contribute to increase sleep, and soften the pain.

The purport of this account has been confirmed by various other travellers; who all agree that this bat is posessed of a faculty of drawing the blood from persons sleeping, and thus often destroying them before they awake. But still a very strong difficulty remains to be accounted for, the manner in which they inflict the wound. Ulloa, as has been seen, supposes that it is done by a single tooth; but this we know to be impossible, since the animal cannot infix one tooth without all the rest accompanying its motions; the teeth of the bat kind being pretty even, and the mouth but small. M. Buffon therefore supposes the wound to be inflicted by the tongue; which, however, appears to me too large to inflict an unpainful wound, and even less qualified for that purpose than the teeth. Nor can the tongue, as M. Buffon seems to suppose, serve for the purposes of suction, since for this it must be hollow like a syringe, which it is not found to be. I should therefore suppose, that the animal is endowed with a strong power of suction; and that, without inflicting any wound whatsoever, by continuing to draw, it enlarges the pores of the skin in such a manner that the blood at length passes, and that more freely the longer the operation is continued; so that, at last, when the bat goes off, the blood continues to flow. In conformation of this opinion we are told, that where beasts have a thick skin, this animal cannot injure them; whereas, in horses, mules, and asses, they are very liable to be thus destroyed. As to the rest, these animals are considered as one of the great pests of South America, and often prevent the peopling of many parts of that continent, having destroyed at Barja,

and several other places, such cattle as were brought there by the missionaries in order to form a settlement.

CHAPTER V.

OF AMPHIBIOUS QUADRUPEDS.

THE gradations of nature from one class of beings to another are made by imperceptible deviations. As we saw in the foregoing chapters quadrupeds almost degraded into the insect tribe, or mounted among the inhabitants of the air, we are at present to observe their approach to fishes, to trace the degrees by which they become more unlike terrestrial animals, till the similitude of the fish prevails over that of the quadruped.

As in opposite armies the two bodies are distinct and separated from each other, while yet between them are various troops that plunder on both sides, and are friends to neither, so between terrestrial and aquatic animals there are tribes that can scarcely be referred to any rank, but lead an amphibious life between them. Sometimes in water, sometimes on land, they seem fitted for each element, and yet completely adapted to neither. Wanting the agility of quadrupeds upon land, and the perseverance of fishes in the deep, the variety of their powers only seems to diminish their force; and though possessed of two different methods of living, they are more inconveniently provided than such as have but one.

All quadrupeds of this kind, though covered with hair in the usual manner, are furnished with membranes between the toes which assist their motion in the water. Their paws are broad, and their legs

short, by which they are more completely fitted for swimming, for, taking short strokes at a time, they make them oftener and with greater rapidity. Some, however, of these animals are more adapted to live in the water than others; but, as their power increases to live in the deep, their unfitness for living upon land increases in the same proportion. Some, like the otter, resemble quadrupeds in every thing except in being in some measure web-footed; others depart still further, in being, like the beaver, not only web-footed but having the tail covered with scales like those of a fish. Others depart yet farther, as the seal and the morse, by having the hind-feet stuck to the body like fins; and others, as the lamentin, almost entirely resemble fishes, by having no hind-feet whatsoever, Such are the gradations of the amphibious tribe. They all, however, get their living in the water, either by habit or conformation; they all continue a long time under water; they all consider that element as their proper abode: whenever pressed by danger they fly to the water for security; and, when upon land appear watchful, timorous, and unwieldy.

THE OTTER.

In the first step of the progression from land to amphibious animals we find the Otter, resembling those of the terrestrial kind in shape, hair, and internal conformation; resembling the aquatic tribes in its manner of living, and in having membranes between the toes to assist it in swimming. From this peculiar make of its feet, which are very short, it swims even faster than it runs, and can overtake fishes in their own element. The colour of this animal is brown; and it is somewhat of the shape of an overgrown wea-

sel, being long, slender, and soft skinned. However, if we examine its figure in detail, we shall find it unlike any other animal hitherto described, and of such a shape as words can but weakly convey.* Its usual length is about two feet long from the tip of the nose to the insertion of the tail: the head and nose are broad and flat; the mouth bears some similitude to that of a fish, the neck is short, and equal in thickness to the head; the body long; the tail broad at the insertion, but tapering off to a point at the end; the eyes are very small, and placed nearer the nose than usual in quadrupeds. The legs are very short, but remarkably strong, broad and muscular: The joints are articulated so loosely, that the animal is capable of turning them quite back, and bringing them on a line with the body, so as to perform the office of fins. Each foot is furnished with five toes, connected by strong broad webs, like those of water-fowl. Thus nature, in every part, has had attention to the life of an animal whose food is fish, and whose haunts must necessarily be about water.

This voracious animal is never found but at the sides of lakes and rivers, but particularly the former, as it is seldom fond of fishing in a running stream; for the current of the water having more power upon it than the fishes it pursues, if it hunts against the stream it swims too slow, and if with the stream it overshoots its prey. However, when in rivers, it is always observed to swim against the stream, and to meet the fishes it preys upon, rather than to pursue them. In lakes it destroys much more than it devours, and is often seen to spoil a pond in the space of a few nights. But the damage they do by destroying fish is not so great as their tearing in pieces

[* The Otter has six cutting teeth in each jaw; those of the upper jaw erect, sharp pointed and distinct; of the lower jaw, blunter, huddled together, and two placed within the line of the rest.]

the nets of the fishers, which they infallibly do whenever they happen to be entangled. The instant they find themselves caught, they go to work with their teeth, and in a few minutes destroy nets of a very considerable value.

The otter has two different methods of fishing; the one by catching its prey from the bottom upward, the other by pursuing it into some little creek, and seizing it there. In the former case, as this animal has longer lungs than most other quadrupeds, upon taking in a quantity of air it can remain for some minutes at the bottom; and whatever fish passes over at that time is certainly taken; for, as the eyes of fish are placed so as not to see under them, the otter attacks them off their guard from below, and, seizing them at once by the belly, drags them on shore, where it often leaves them untouched, to continue the pursuit for hours together. The other method is chiefly practised in lakes and ponds, where there is no current; the fish thus taken are rather of the smaller kind, for the great ones will never be driven out of deep water.

In this manner the otter usually lives during the summer, being furnished with a supply much greater than its consumption; killing for its amusement, and infecting the edges of the lake with quantities of dead fish, which it leaves there as trophies rather of its victory than its necessities. But in winter, when the lakes are frozen over, and the rivers pour with a rapid torrent, the otter is often greatly distressed for provisions, and is then obliged to live upon grass, weeds, and even the bark of trees. It then comes upon land, and grown courageous from necessity, feeds upon terrestrial animals, rats, insects and even sheep themselves. Nature, however, has given it the power of continuing a long time without food; and although during that season it is not render-

ed quite torpid, like the marmot or the dormouse, yet it keeps much more within its retreat, which is usually the hollow of a bank worn under by the water. There it often forms a kind of gallery, running for several yards along the edge of the water; so that when attacked at one end, it flies to the other, and often evades the fowler by plunging into the water at forty or fifty paces distance, while he expects to find it just before him.

We learn from M. Buffon, that this animal, in France, couples in winter, and brings forth in the beginning of spring. But it is certainly different with us, for its young are never found till the latter end of summer; and I have frequently, when a boy, discovered their retreats, and pursued them at that season. I am, therefore, more inclined to follow the account given us of this animal by Mr. Lots, of the Academy of Stockholm, who assures us that it couples about the middle of summer, and brings forth at the end of nine weeks, generally three or four at a time. This, as well as the generality of his other remarks on this subject, agrees so exactly with what I remember concerning it, that I will beg leave to take him for my guide; assuring the reader, that however extraordinary the account may seem, I know it to be certainly true.

In the rivers and the lakes frequented by the otter, the bottom is generally stony and uneven, with many trunks of trees, and long roots stretching underneath the water.* The shore also is hollow and scooped inward by the waves. These are the places the otter chiefly chooses for its retreat; and there is scarcely a stone which does not bear the mark of its residence, as upon them its excrements are always made. It is chiefly by this mark that its lurking places are known, as well as by the quantity of dead

* Journal Etranger, Juin 1755, p. 14.

fish that are found lying here and there upon the banks of the water. To take the old ones alive is no easy task, as they are extremely strong, and there are few dogs that will dare to encounter them. They bite with great fierceness, and never let go their hold when they have once fastened. The best way, therefore, is to shoot them at once, as they never will be thoroughly tamed; and, if kept for the purposes of fishing, are always apt to take the first opportunity of escaping. But the young ones may be more easily taken, and converted to very useful purposes. The otter brings forth its young generally under the hollow banks, upon a bed of rushes, flags, or such weeds as the place affords in greatest quantities. I see in the British Zoology a description of its habitation, where that naturalist observes, "that it burrows under ground, on the banks of some river or lake, and always makes the entrance of its hole under water, then works up to the surface of the earth, and there makes a minute orifice for the admission of air; and this little air-hole is often found in the middle of some thicket." In some places this may be true but I have never observed any such contrivance: the, retreat, indeed, was always at the edge of the water, but it was only sheltered by the impending bank, and the otter itself seemed to have but a small share in its formation. But, be this as it may, the young ones are always found at the edge of the water; and, if under the protection of the dam, she teaches them instantly to plunge, like herself, into the deep, and escape among the rushes or weeds that fringe the stream. At such times, therefore, it is very difficult to take them; for, though never so young, they swim with great rapidity, and in such a manner that no part of them is seen above water, except the tip of the nose. It is only when the dam is absent that they can be taken; and in some places there are

dogs purposely trained for discovering their retreats. Whenever the dog comes to the place, he soon, by his barking, shows that the otter is there; which, if there be an old one, instantly plunges into the water, and the young all follow. But if the old one be absent, they continue terrified, and will not venture forth but under her guidance and protection. In this manner they are secured and taken home alive; where they are carefully fed with small fish and water. In proportion, however, as they gather strength, they have milk mixed among their food, the quantity of their fish provision is retrenched, and that of vegetables is increased, until at length they are fed wholly upon bread, which perfectly agrees with their constitution. The manner of training them up to hunt for fish requires not only assiduity but patience; however, their activity and use, when taught, greatly repays the trouble of teaching; and perhaps no other animal is more beneficial to its master. The usual way is, first to learn them to fetch as dogs are instructed; but, as they have not the same docility, so it requires more art and experience to teach them. It is usually performed by accustoming them to take a truss stuffed with wool, of the shape of a fish, and made of leather, in their mouths, and to drop it at the word of command; to run after it when thrown forward, and to bring it to their master. From this they proceed to real fish, which are thrown dead into the water, and which they are taught to fetch from thence. From the dead they proceed to the live, until at last the animal is perfectly instructed in the whole art of fishing. An otter thus taught is a very valuable animal, and will catch fish enough to sustain not only itself but a whole family. I have seen one of these go to a gentleman's pond at the word of command, drive up the fish into a corner, and seizing upon the largest of the whole, bring it off in its mouth to its master.

Otters are to be met with in most parts of the world, and rather differ in size and colour from each other, than in habitudes or conformation.* In North America and Carolina they are usually found white, inclining to yellow. The Brasilian otter is much larger than ours, with a roundish head, almost like a cat. The tail is shorter, being but five inches long; and the hair is soft, short, and black, except on the head, where it is of a dark brown, with a yellowish spot under the throat.

THE BEAVER.

In all countries as man is civilized and improved, the lower ranks are depressed and degraded.† Either reduced to servitude, or treated as rebels, all their societies are dissolved, and all their united talents rendered ineffectual. Their feeble arts quickly disappear, and nothing remains but their solitary instincts, or those foreign habitudes which they receive from human education. For this reason there remain no traces of their ancient talents and industry, except in those countries where man himself is a stranger; where, unvisited by his controlling power, for a long succession of ages, their little talents have had time to come to their limited perfection, and their common designs have been capable of being united.

The beaver seems now to be the only remaining monument of brutal society.‡ From the result of its labours, which are still to be seen in the remote parts

* Ray. † Buffon.

[‡ This animal has the fore-teeth of the upper jaw truncated, and hollowed in a transverse angular direction; the tops of the fore-teeth of the lower jaw lie in a transverse direction; it has eight grinders in each jaw and the tail is depressed.]

of America, we learn how far instinct can be aided by imitation. We from thence perceive to what a degree animals, without language or reason, can concur for their mutual advantage, and attain by numbers those advantages which each, in a state of solitude, seems unfitted to possess.

If we examine the beaver merely as an individual, and unconnected with others of its kind, we shall find many other quadrupeds to exceed it in cunning, and almost all in the powers of annoyance and defence. The beaver, when taken from its fellows, and kept in a state of solitude or domestic tameness, appears to be a mild, gentle creature, familiar enough, but somewhat dull, and even melancholy; without any violent passions or vehement appetites, moving but seldom, making no efforts to attain any good, except in gnawing the wall of its prison, in order to regain its freedom; yet this, however, without anger or precipitation, but calm and indifferent to all about it, without attachment or antipathies, neither seeking to offend nor desiring to please. It appears inferior to the dog in those qualities which render animals of service to man; it seems made neither to serve, to command, nor to have connexions with any other set of beings, and is only adapted for living among its kind. Its talents are entirely repressed in solitude, and are only brought out by society. When alone, it has but little industry, few tricks, and without cunning sufficient to guard it against the most obvious and bungling snares laid for it by the hunter. Far from attacking any other animal, it is scarcely possessed of the arts of defence. Preferring flight to combat, like all wild animals, it only resists when driven to an extremity, and fights only when its speed can no longer avail.

But this animal is rather more remarkable for the singularity of its conformation, than any intellectual

superiorities it may be supposed in a state of solitude to possess. The beaver is the only creature among quadrupeds that has a flat broad tail, covered with scales, which serves as a rudder to direct its motions in the water. It is the sole quadruped that has membranes between the toes on the hind-feet only, and none on the fore-feet, which supply the place of hands as in the squirrel. In short, it is the only animal that in its fore-parts entirely resembles a quadruped, and in its hinder parts seems to approach the nature of fishes, by having a scaly tail. In other respects, it is about two feet long, and near one foot high: it is somewhat shaped like a rat, except the tail, which, as has been observed, is flat and scaly, somewhat resembling a neat's tongue at the point. Its colour is of a light brown: the hair of two sorts; the one longer and coarser; the other, soft, fine, short, and silky. The teeth are like those of a rat or a squirrel, but longer and stronger, and admirably adapted to cutting timber or stripping bark, to which purposes they are constantly applied. One singularity more may be mentioned in its conformation, which is, that, like birds, it has but one and the same vent for the emission of its excrements and its urine; a strange peculiarity, but which anatomists leave us no room to doubt of.

The beavers begin to assemble about the months of June and July, to form a society that is to continue for the greatest part of the year. They arrive in numbers from every side, and generally form a company of above two hundred. The place of meeting is commonly the place where they fix their abode, and this is always by the side of some lake or river. If it be a lake in which the waters are always upon a level, they dispense with building a dam; but if it be a running stream, which is subject to floods and falls, they then set about building

a dam, or pier, that crosses the river, so that it forms a dead water in that part which lies above and below. This dam or pier, is often fourscore or a hundred feet long, and ten or twelve feet thick at the base. If we compare the greatness of the work with the powers of the architect, it will appear enormous; but the solidity with which it is built is still more astonishing than its size. The part of the river over which this dam is usually built, is where it is most shallow, and where some great tree is found growing by the side of the stream. This they pitch upon as proper for making the principal part in their building; and although it is often thicker than a man's body, they instantly set about cutting it down. For this operation they have no other instrument but their teeth, which soon lay it level, and that also on the side they wish it to fall, which is always across the stream. They then fall about cutting off the top branches, to make it lie close and even, and serve as the principal beam of their fabric.*

This dike, or causey, is sometimes ten, and sometimes twelve feet thick at the foundation. It descends in a declivity or slope on that side next the water, which gravitates upon the work in proportion to the height, and presses it with a prodigious force towards the earth. The opposite side is erected perpendicular, like our walls, and that declivity, which, at the bottom, or basis, is about twelve feet broad, diminishes towards the top, where it is no more than two feet broad, or thereabouts. The materials whereof this mole consists, are wood and clay. The beavers cut, with surprising ease, large pieces of wood, some as thick as one's arm or thigh, and about four, five, or six feet in length, or sometimes more, according as the slope ascends. They drive one end of these stakes into the ground, at a

* Spectacle de la Nature.

small distance one from the other, intermingling a few with them that are smaller and more pliant. As the water, however, would find a passage through the intervals or spaces between them, and leave the reservoir dry, they have recourse to a clay, which they know where to find, and with which they stop up all the cavities both within and without, so that the water is duly confined. They continue to raise the dike in proportion to the elevation of the water, and the plenty which they have of it. They are conscious likewise that the conveyance of their materials by land, would not be so easily accomplished as by water; and therefore they take the advantage of its increase, and swim with their mortar on their tails, and their stakes between their teeth, to the places where there is most occasion for them. If their works are, either by the force of the water, or the feet of the huntsmen who run over them, in the least damnified, the breach is instantly made up; every nook and corner of the habitation is reviewed, and, with the utmost diligence and application, perfectly repaired. But when they find the huntsmen visit them too often, they work only in the night-time, or else abandon their works entirely, and seek out for some safer situation.

The dike or mole being thus completed, their next care is to erect their several apartments, which are either round or oval, and divided into three stories, one raised above the other; the first below the level of the causey, which is for the most part full of water; the other two above it. This little fabric is built in a very firm and substantial manner, on the edge of their reservoir, and always in such divisions or apartments as above-mentioned; that in case of the water's increase, they may move up a story higher, and be no ways incommoded. If they find any little island contiguous to their reservoir,

they fix their mansion there, which is then more solid, and not so frequently exposed to the overflowing of the water, in which they are not able to continue for any length of time. In case they cannot pitch upon so commodious a situation, they drive piles into the earth, in order to fence and fortify their habitation against the wind as well as the water. They make two apertures, at the bottom, to the stream; one is a passage to their bagnio, which they always keep neat and clean; the other leads to that part of the building where every thing is conveyed that will either soil or damage their upper apartments. They have a third opening or door-way, much higher, contrived for the prevention of their being shut up and confined when the frost and snow has closed the apertures of the lower floors. Sometimes they build their houses altogether upon dry land; but then they sink trenches five or six feet deep, in order to descend into the water when they see convenient. They make use of the same materials, and are equally industrious, in the erection of their lodges as their dikes. Their walls are perpendicular and about two feet thick. As their teeth are more serviceable than saws, they cut off all the wood that projects beyond the wall. After this, when they have mixed up some clay and dry grass together, they work it into a kind of mortar, with which, by the help of their tails, they plaster all their works, both within and without.

The inside is vaulted, and is large enough for the reception of eight or ten beavers. In case it rises in an oval figure, it is for the generality above twelve feet long, and eight or ten feet broad. If the number of inhabitants increase to fifteen, twenty, or thirty, the edifice is enlarged in proportion. I have been credibly informed, that four hundred beavers have been discovered to reside in one large mansion-house, divided into a vast number of apartments, that had a free communication one with another.

All these works, more especially in the northern parts are finished in August, or September at farthest; at which time they begin to lay in their stores. During the summer, they are perfect epicures, and regale themselves every day on the choicest fruits and plants the country affords. Their provisions, indeed, in the winter season, principally consist of the wood of the birch, the plane, and some few other trees, which they steep in water, from time to time in such quantities as are proportioned to the number of inhabitants. They cut down branches from three to ten feet in length. Those of the largest dimensions are conveyed to their magazines by a whole body of beavers; but the smallest by one only; each of them, however, takes a different way, and has his proper walk assigned him, in order that no one labourer should interrupt another in the prosecution of his work. Their wood-yards are larger or smaller in proportion to the number in the family; and, according to the observation of some curious naturalists, the usual stock of timber, for the accommodation of ten beavers, consists of about thirty feet in a square surface, and ten in depth. These logs are not thrown up in one continued pile, but laid one across the other, with intervals or small spaces between them, in order to take out, with the greater facility, but just such a quantity as they shall want for their immediate consumption, and those parcels only which lie at the bottom in the water, and have been duly steeped. This timber is cut again into small particles, and conveyed to one of their largest lodges, where the whole family meet, to consume their respective dividends, which are made impartially, in even and equal portions. Sometimes they traverse the woods, and regale their young with a more novel and elegant entertainment.

Such as are used to hunt these animals, know

perfectly well that green wood is much more acceptable to them than that which is old and dry; for which reason they plant a considerable quantity of it round their lodgments; and as they come out to partake of it, they either catch them in snares or take them by surprise. In the winter, when the frosts are very severe, they sometimes break a large hole in the ice; and when the beavers resort thither for the benefit of a little fresh air, they either kill them with their hatchets, or cover the hole with a large substantial net. After this, they undermine and subvert the whole fabric; whereupon the beavers, in hopes to make their escape in the usual way, fly with the utmost precipitation to the water, and plunging into the aperture, fall directly into the net, and are inevitably taken.

THE SEAL.

Every step we proceed in the description of amphibious quadrupeds, we make nearer advances to the tribe of fishes. We first observed the otter with its feet webbed, and formed for an aquatic life; we next saw the beaver with the hinder parts covered with scales, resembling those of fishes; and we now come to a class of animals in which the shape and habitude of fishes still more apparently prevail, and whose internal conformation attaches them very closely to the water. The Seal, in general, resembles a quadruped in some respects, and a fish in others.* The head is round, like that of a man; the

[* The Seal has six parallel fore-teeth in the upper jaw, the outermost being larger; and four blunt, parallel, distinct, equal fore-teeth in the under jaw. There is but one dog-tooth on each side, and five or six three-pointed grinders; and the hind-feet are united so as to resemble a sheep's tail.]

nose broad, like that of the otter; the teeth like those of a dog; the eyes large and sparkling; no external ears, but holes that serve for that purpose; the neck is well proportioned, and of a moderate length; but the body thickest where the neck is joined to it. From thence the animal tapers down to the tail, growing all the way smaller like a fish. The whole body is covered with a thick bristly shining hair, which looks as if it were entirely rubbed over with oil; and thus far the quadruped prevails over the aquatic. But it is in the feet that this animal greatly differs from all the rest of the quadruped kind; for; though furnished with the same number of bones with other quadrupeds, yet they are so stuck on the body, and so covered with a membrane, that they more resemble fins than feet; and might be taken for such, did not the claws with which they are pointed show their proper analogy. In the fore feet, or rather hands, all the arm and the cubit are hid under the skin, and nothing appears but the hand from the wrist downwards; so that if we imagine a child with its arms swathed down, and nothing appearing but its hands at each side of the body, towards the breast, we may have some idea of the formation of this animal in that part. These hands are covered in a thick skin, which serves like a fin for swimming, and are distinguished by five claws, which are long, black, and piercing. As to the hind-feet, they are stretched out on each side of the short tail, covered with a hairy skin like the former, and both together almost joining at the tail; the whole looks like the broad flat tail of a fish, and, were it not for five claws which appear, might be considered as such. The dimensions of this animal are various, being found from four feet long to nine. They differ also in their colours; some being black, others spotted, some white, and many more yellow.

It would, therefore, be almost endless to mention the varieties of this animal. Buffon describes three; and Crantz mentions five, all different from those described by the other. I might, were I fond of such honours, claim the merit of being a first describer myself; but, in fact, the varieties in this animal are so many, that, were they all described, the catalogue would be as extensive as it would be useless and unentertaining. It is sufficient to observe, that they agree in the general external characters already mentioned, and internally in two or three more, which are so remarkable as to deserve peculiar attention.

It has been often remarked, that all animals are sagacious in proportion to the size of their brain. It has, in support of this opinion, been alleged, that man, with respect to his bulk, has of all others the largest. In pursuance of this assumption, some erroneous speculations have been formed. But were the size of the brain to determine the quantity of the understanding, the seal would of all other animals be the most sagacious; for it has, in proportion, the largest brain of any, even man himself not excepted. However, this animal is possessed of but very few advantages over other quadrupeds; and the size of its brain furnishes it with few powers that contribute to its wisdom or its preservation.

This animal differs also in the formation of its tongue from all other quadrupeds. It is forked or slit at the end like that of serpents; but for what purpose it is thus singularly contrived we are at a loss to know. We are much better informed with respect to a third singularity in its conformation, which is, that the *foramen ovale* in the heart is open. Those who are in the least acquainted with anatomy, know, that the veins uniting bring their blood to the heart, which sends it into the lungs, and from thence it returns to the heart again, to be distributed

through the whole body. Animals, however, before they are born, make no use of their lungs: and therefore, their blood, without entering their lungs, takes a shorter passage through the very partition of the heart, from one of its chambers to the other, thus passing from the veins directly into those vessels that drive it through the whole frame. But the moment the animal is brought forth, the passage through the partition (which passage is called the *foramen ovale*) closes up, and continues closed for ever; for the blood then takes its longest course through the lungs to return to the other chamber of the heart again. Now the seal's heart resembles that of an infant in the womb, for the *foramen ovale* never closes; and although the blood of this animal commonly circulates through the lungs, yet it can circulate without their assistance, as was observed above, by a shorter way.* From hence, therefore, we see the manner in which this animal is adapted for continuing under water; for, being under no immediate necessity of breathing, the vital motions are still carried on while it continues at the bottom; so that it can pursue its prey in that element, and yet enjoy all the delights and advantages of ours.

The water is the seal's usual habitation, and whatever fish it can catch its food. Though not equal in instinct and cunning to some terrestrial animals, it is greatly superior to the mute tenants of that element in which it chiefly resides. Although it can continue for several minutes under water, yet it is not able, like fishes, to remain there for any length of time; and a seal may be drowned like any other terrestrial animal. Thus it seems superior in

* I have followed the usual observations of naturalists with respect to the *foramen ovale* in this animal: I have many reasons, however, to incline me to think that the *foramen* is not entirely open. But this is not the place for a critical inquiry of this kind.

some respects to the inhabitants of both elements, and inferior in many more. Although furnished with legs, it is in some measure deprived of all the advantages of them.* They are shut up within its body, while nothing appears but the extremities of them, and these furnished with very little motion, but to serve them as fins in the water. The hind-feet, indeed, being turned backwards, are entirely useless upon land; so that when the animal is obliged to move, it drags itself forward like a reptile, and with an effort more painful. For this purpose it is obliged to use its fore-feet, which, though very short, serve to give it such a degree of swiftness, that a man cannot readily overtake it; and it runs towards the sea. As it is thus awkwardly formed for going upon land, it is seldom found at any distance from the sea-shore, but continues to bask upon the rocks; and, when disturbed, always plunges down at once to the bottom.

The seal is a social animal, and, wherever it frequents, numbers are generally seen together. They are found in every climate, but in the north and icy seas they are particularly numerous. It is on those shores, which are less inhabited than ours, and where the fish resort in greater abundance, that they are seen by thousands, like flocks of sheep, basking on the rocks, and suckling their young. There they keep watch, like other gregarious animals; and, if an enemy appear, instantly plunge all together into the water. In fine weather they more usually employ their time in fishing, and generally come on shore in tempests and storms. The seal seems the only animal that takes delight in these tremendous conflicts of nature. In the midst of thunders and torrents, when every other creature takes refuge from the fury of the elements, the seals are seen

* Buffon.

by thousands sporting along the shore, and delighted with the universal disorder. This, however, may arise from the sea being at that time too turbulent for them to reside in; and they may then particularly come upon land, when unable to resist the shock of their more usual element.

As seals are gregarious, so they are also animals of passage, and perhaps the only quadrupeds that migrate from one part of the world to another. The generality of quadrupeds are contented with their native plains and forests, and seldom stray, except when necessity or fear impels them. But seals change their habitation, and are seen in vast multitudes directing their course from one continent to another.* On the northern coasts of Greenland, they are seen to retire in July, and to return again in September. This time, it is supposed, they go in pursuit of food. But they make a second departure in March to cast their young, and return in the beginning of June, young, and all, in a great body together, observing in their route a certain fixed time and track, like birds of passage. When they go upon this expedition, they are seen in great droves, for many days together, making towards the north, taking that part of the sea most free from ice, and going still forward into those seas where man cannot follow. In what manner they return, or by what passage, is utterly unknown; it is only observed, that when they leave the coasts to go upon this expedition they are all extremely fat, but on their return they come home excessively lean.

The females in our climate bring forth in winter, and rear their young upon some sand-bank, rock, or desolate island, at some distance from the continent. When they suckle their young, they sit up on their hinder legs, while these, which are at first

* Crantz, vol. i, p. 129.

white with woolly hair, cling to the teats, of which there are four in number, near the navel.* In this manner the young continue in the place where they are brought forth for twelve or fifteen days; after which the dam brings them down to the water, and accustoms them to swim, and get their food by their own industry. As each litter never exceeds above three or four, so the animal's cares are not much divided, and the education of her little ones is soon completed. In fact, the young are particularly docile; they understand the mother's voice among the numerous bleatings of the rest of the old ones; they mutually assist each other in danger, and are perfectly obedient to her call. Thus early accustomed to subjection, they continue to live in society, hunt and breed together, and have a variety of tones, by which they encourage to pursue, or warn each other of danger. Some compare their voices to the bleating of a flock of sheep, interrupted now and then by the barking of angry dogs, and sometimes the shriller notes of a cat.† All along the shore, each has its own peculiar rock, of which it takes possession, and where it sleeps when fatigued with fishing, uninterrupted by any of the rest. The only season when their social spirit seems to forsake them, is that when they feel the influences of natural desire. They then fight most desperately, and the male that is victorious keeps all the females to himself. Their combats on these occasions are managed with great obstinacy, and yet great justice: two are never seen to fall upon one together; but each has its antagonist, and all fight an equal battle, till one alone becomes victorious.

We are not certainly informed how long the females continue pregnant; but if we may judge from

* Coeunt in littore resupinata femina.—Lin. Syst.
† Linnæi Syst.

the time which intervenes between their departure from the Greenland coasts and their return, they cannot go above seven or eight months at the farthest. How long this animal lives is also unknown: a gentleman whom I knew in Ireland, kept two of them, which he had taken very young, in his house for ten years; and they appeared to have the marks of age at the time I saw them, for they were grown gray about the muzzle; and it is very probable they did not live many years longer. In their natural state the old ones are seen very fat and torpid, separated from the rest, and, as it should seem, incapable of procreation.

As their chief food is fish, so they are very expert at pursuing and catching it. In those places where the herrings are seen in shoals, the seals frequent, and destroy them by thousands. When the herrings retire, the seal is then obliged to hunt after fish that are stronger, and more capable of evading the pursuit:* however, they are very swift in deep waters, dive with great rapidity, and while the spectator eyes the spot at which they disappear, they are seen to emerge at above a hundred yards distance. The weaker fishes, therefore, have no other means to escape their tyranny, but by darting into the shallows. The seal has been seen to pursue a mullet, which is a swift swimmer, and to turn it to and fro, in deep water, as a hound does a hare on land. The mullet has been seen trying every art of evasion, and at last swimming into shallow water, in hopes of escaping. There, however, the seal followed; so that the little animal had no other way left to escape, but to throw itself on one side, by which means it darted into shoaler water than it could have swam in with the belly undermost; and thus at last it got free.

As they are thus the tyrants of the element in

* British Zoology. vol. i. p. 75.

which they chiefly reside, so they are not very fearful even upon land, except on those shores which are thickly inhabited, and from whence they have been frequently pursued. Along the desert coasts where they are seldom interrupted by man, they seem to be very bold and courageous: if attacked with stones, like dogs, they bite such as are thrown against them; if encountered more closely, they make a desperate resistance, and, while they have any life, attempt to annoy their enemy. Some have been known, even while they were skinning, to turn round and seize their butchers; but they are generally dispatched by a stunning blow on the nose. They usually sleep soundly when not frequently disturbed, and that is the time when the hunters surprise them. The Europeans, who go into the Greenland seas upon the whale-fishery, surround them with nets, and knock them on the head; but the Greenlanders, who are unprovided with so expensive an apparatus, destroy them in a different manner. One of these little men paddles away in his boat, and when he sees a seal asleep on the side of a rock, darts his lance, and that with such unerring aim, that it never fails to bury its point in the animal's side. The seal feeling itself wounded, instantly plunges from the top of the rock, lance and all, into the sea, and dives to the bottom; but the lance has a bladder tied to one end, which keeps buoyant, and resists the animal's descent; so that every time the seal rises to the top of the water, the Greenlander strikes it with his oar, until he at last despatches it. But in our climate the seals are much more wary, and seldom suffer the hunter to come near them. They are often seen upon the rocks of the Cornish coast, basking in the sun, or upon the inaccessible cliffs left dry by the tide. There they continue, extremely watchful, and never sleep long without moving, seldom longer than

a minute; for then they raise their heads, and if they see no danger, they lie down again, raising and reclining their heads alternately at intervals of about a minute each. The only method, therefore, that can be taken, is to shoot them: if they chance to escape, they hasten towards the deep, flinging stones and dirt behind them as they scramble along, and at the same time expressing their pain or their fears by the most distressful cry; if they happen to be overtaken, they make a vigorous resistance with their feet and teeth till they are killed.

The seal is taken for the sake of its skin, and for the oil its fat yields. The former sells for about four shillings, and, when dressed, is very useful in covering trunks, making waistcoats, shot-pouches, and several other conveniences. The flesh of this animal formerly found place at the tables of the great. At a feast provided by Archbishop Neville for Edward the Fourth, there were twelve seals and porpoises provided, among other extraordinary rarities.

As a variety of this animal, we may mention the Sea Lion, described in Anson's Voyages. This is much larger than any of the former; being from eleven to eighteen feet long. It is so fat, that when the skin is taken off, the blubber lies a foot thick all round the body. It seems to differ from the ordinary seal, not only in its size, but also in its food; for it is often seen to graze along the shore, and to feed upon the long grass that grows up along the edges of brooks. Its cry is very various, sometimes resembling the neighing of a horse, and sometimes the grunting of the hog. It may be regarded as the largest of the seal family.

THE MORSE.

THE Morse is an animal of the seal kind; but differing from the rest in a very particular formation of the teeth, having two large tusks growing from the upper jaw, shaped like those of an elephant, but directed downwards, whereas in the elephant they grow upright, like horns; it also wants the cutting teeth both above and below:* as to the rest, it pretty much resembles a seal, except that it is much larger, being from twelve to sixteen feet long. The morses are also generally seen to frequent the same places that seals are known to reside in; they have the same habitudes, the same advantages, and the same imperfections. There are, however, fewer varieties of the morse than the seal; and they are rarely found, except in the frozen regions near the pole. They were formerly more numerous than at present; and the savage natives of the coasts of Greenland destroyed them in much greater quantities before those seas were visited by European ships upon the whale-fishery, than now. Whether these animals have been since actually thinned by the fishers, or have removed to some more distant and unfrequented shores, is not known; but certain it is, that the Greenlanders, who once had plenty, are now obliged to toil more assiduously for subsistence; and as the quantity of their provisions decrease, for they live mostly upon seals, the numbers of that poor people are every day diminishing. As to the teeth, they are generally from two to three feet long; and the ivory

[* This animal has no fore-teeth when full grown; has two great tusks in the upper jaw, which point downwards; and grinders on each side in both jaws, which are composed of furrowed bones. The body is oblong; the lips are doubled, and the hind legs are stretched backwards, and, as it were, bound together, forming a kind of tail fitted for swimming.]

is much more esteemed than that of the elephant, being whiter and harder. The fishers have been known formerly to kill three or four hundred at once; and along those shores where they chiefly frequented, their bones are still seen lying in prodigious quantities. In this manner a supply of provisions, which would have supported the Greenland nation for ages, has been, in a few years, sacrificed to those who did not use them, but who sought them for the purposes of avarice and luxury!

[These animals inhabit the coast of Spitzbergen, Nova Zembla, Hudson's Bay, the Gulf of St. Lawrence, and the Icy Sea, as far as Cape Tschuktschi. They are gregarious; in some places appearing in herds of hundreds. They are shy animals, and avoid places which are much hunted by mankind. If wounded in the water, they attempt to sink the boat, either by rising under it, or by striking their great teeth into its sides: they roar very loud, and will follow the boat till it gets out of sight. Numbers of them are often seen sleeping on an island of ice, some being always upon the watch: if awaked, they fling themselves with great impetuosity into the sea; at which time it is dangerous to approach the ice, lest they should tumble into the boat and overset it. At particular times they land in amazing numbers: the moment the first gets on shore, so as to lie dry, it will not stir till another comes and forces it forward by beating it with its great teeth; this is served in the same manner by the next, and so in succession till the whole is landed, continuing tumbling over one another, and forcing the foremost, for the sake of quiet, to remove farther up.

In Cook's Voyages we have the following affecting account of their parental attachment to their young. " On the approach of the boats towards the

ice, they took their young ones under their fins, and attempted to escape with them into the sea. Some, whose cubs were killed or wounded, and left floating upon the surface of the water, rose again and carried them down, sometimes just as our men were on the point of taking them into the boat; and could be traced bearing them to a considerable distance through the water, which was stained with their blood. They were afterwards observed bringing them at intervals, above the surface, as if for air, and again plunging under it, with a horrid bellowing. The female, in particular, whose young one had been killed, and taken into the boat, became so furious, that she even struck her tusks through the bottom of the cutter.]

THE MANATI.

We come, in the last place, to an animal that terminates the boundary between quadrupeds and fishes. Instead of a creature preying among the deeps, and retiring upon land for repose or refreshment, we have here an animal that never leaves the water, and is enabled to live only there. It cannot be called a quadruped, as it has but two legs only; nor can it be called a fish, as it is covered with hair. In short, it forms the link that unites those two great tribes to each other; and may be indiscriminately called the last of beasts, or the first of fishes.

We have seen the seal approaching nearly to the aquatic tribes, by having its hind-legs thrown back on each side of the tail, and forming something that resembled the tail of a fish; but upon examining the skeleton of that animal, its title to the rank of a quadruped was observed plainly to appear, having all the

bones of the hinder legs and feet as complete as any other animal whatsoever.

But we are now come to a creature that not only wants the external appearance of hinder legs, but, when examined internally, will be found to want them altogether. The manati is somewhat shaped in the head and the body like a seal; it has also the fore-legs or hands pretty much in the same manner, short and webbed, but with four claws only: these also are shorter in proportion than in the former animal, and placed nearer the head, so that they can scarcely assist its motions upon land. But it is in the hinder parts that it chiefly differs from all others of the seal kind; for the tail is perfectly that of a fish, being spread out broad like a fan, and wanting even the vestiges of those bones which make the legs and feet in others of its kind. The largest of these are about twenty-six feet in length; the skin is blackish, very tough and hard; when cut, as black as ebony; and there are a few hairs scattered, like bristles, of about an inch long. The eyes are very small in proportion to the animal's head; and the ear-holes, for it has no external ears, are so narrow as scarcely to admit a pin's head. The tongue is so short, that some have pretended it has none at all; and the teeth are composed only of two solid white bones, running the whole length of both jaws, and formed merely for chewing, and not tearing its vegetable food. The female has breasts placed forward, like those of a woman; and she brings forth but one at a time: this she holds with her paws to her bosom; there it sticks, and accompanies her wherever she goes.

This animal can scarcely be called amphibious, as it never entirely leaves the water, only advancing the head out of the stream, to reach the grass on the river sides. Its food is entirely vegetables; and there-

fore it is never found far in the open sea, but chiefly in the large rivers of South America, and often above two thousand miles from the ocean. It is also found in the seas near Kamtschatka, and feeds upon the weeds that grow near the shore. There are likewise level greens at the bottom of some of the Indian bays, and there the manatis are harmlessly seen grazing among turtles and other crustaceous fishes, neither giving nor fearing any disturbance. These animals, when unmolested, keep together in large companies, and surround their young ones.* They bring forth most commonly in autumn; and it is supposed they go with young eighteen months, for the time of generation is in spring.

The manati has no voice nor cry, for the only noise it makes is by fetching its breath. Its internal parts somewhat resemble those of a horse; its intestines being longer, in proportion, than those of any other creature, the horse only excepted.

The fat of the manati, which lies under the skin, when exposed to the sun has a fine smell and taste, and far exceeds the fat of any sea animal: it has this peculiar property, that the heat of the sun will not spoil it, nor make it grow rancid; its taste is like the oil of sweet almonds, and it will serve very well, in all cases, instead of butter: any quantity may be taken inwardly with safety, for it has no other effect than keeping the body open. The fat of the tail is of a harder consistence, and, when boiled, is more delicate than the former. The lean is like beef, but more red, and may be kept a long while, in the hottest days, without tainting. It takes up a long time in boiling; and, when done, eats like beef. The fat of the young one is like pork; the lean is like veal; and upon the whole, it is very probable that this animal's flesh somewhat resembles that of the turtle, since they are fed in the same element, and upon

* Acta Petropolitana.

the very same food. The turtle is a delicacy well known among us: our luxuries are not as yet sufficiently heightened to introduce the manati; which, if it could be brought over, might singly suffice for a whole corporation.

CHAPTER VI.

ANIMALS OF THE MONKEY KIND.

QUADRUPEDS may be considered as a numerous group, terminated on every side by some that but in part deserve the name. On one quarter we see a tribe covered with quills, or furnished with wings, that lift them among the inhabitants of the air; on another, we behold a diversity clothed with scales and shells, to rank with insects; and still, on a third, we see them descending into the waters, to live among the mute tenants of that element. We now come to a numerous tribe, that, leaving the brute creation, seem to make approaches even to humanity; that bear an awkward resemblance of the human form, and discover some faint efforts at intellectual sagacity.

Animals of the monkey class are furnished with hands instead of paws; their ears, eyes, eye-lids, lips, and breasts, are like those of mankind; their internal conformation also bears some distant likeness; and the whole offers a picture that may well mortify the pride of such as make their persons alone the principal object of their admiration.*

[* This numerous tribe have four close set fore-teeth in each jaw, canine teeth on each side in both jaws, which are longer than the rest, and somewhat remote from them; and the grinders are obtuse. The feet are formed like hands, generally with flat nails; and, except in a few instances, they have four fingers and a thumb.]

These approaches, however, are gradual; and some bear the marks of this our boasted form more strongly than others.

In the Ape kind we see the whole external machine strongly impressed with the human likeness, and capable of the same exertions: these walk upright, want a tail, have fleshy posteriors, have calves to their legs, and feet nearly like ours.

In the Baboon kind we perceive a more distant approach to the human form, the quadruped mixing in every part of the animal's figure: these generally go upon all-fours; but some, when upright, are as tall as a man; they have short tails, long snouts, and are possessed of brutal fierceness.

The Monkey kind are removed a step further: these are much less than the former, with tails as long, or longer, than their bodies, and flattish faces.

Lastly, the Maki and Opossum kind seem to lose all resemblance of the human figure, except in having hands: their noses are lengthened out, like those of quadrupeds, and every part of their bodies totally different from the human; however, as they grasp their food, or other objects, with one hand, which quadrupeds cannot do, this single similitude gives them an air of sagacity, to which they have scarcely any other pretensions.

From this slight survey it may be easily seen, that one general description will not serve for animals so very different from each other: nevertheless, it would be fatiguing to the last degree, as their varieties are so numerous, and their differences so small, to go through a particular description of each. In this case it will be best to give a history of the foremost in each class, at the same time marking the distinctions in every species. By this we shall avoid a tedious repetition of similar characters, and consider the manners and the oddities of this fantastic tribe

F. Kearny Sc.

1 Oran Outang 2 Maget 3 Long armed Gibbon 4 Little Gibbon

in general points of view; where we shall perceive how nearly they approach to the human figure, and how little they benefit by the approximation.

THE OURANG OUTANG.

THE foremost of the Ape kind is the Ourang Outang, or Wild Man of the Woods. This name seems to have been given to various animals, agreeing in one common character of walking upright, but coming from different countries, and of very different proportions and powers. The Troglodyte of Bontius, the Drill of Purchas, and the Pigmy of Tyson, have all received this general name, and have been ranked by some naturalists under one general description. If we read the accounts of many remote travellers, under this name we are presented with a formidable animal, from six to eight feet high; if we examine the books of such as have described it nearer home, we find it a pigmy not above three. In this diversity we must be content to blend their various descriptions into one general account; observing, at the same time, that we have no reason to doubt any of their relations, although we are puzzled which to follow.

The ourang outang, which of all other animals most nearly approaches to the human race, is seen of different sizes, from three to seven feet high. In general, however, its stature is less than that of a man, but its strength and agility much greater. Travellers who have seen various kinds of these animals in their native solitudes, give us surprising relations of their force, their swiftness, their address, and their ferocity. Naturalists who have observed their form and manners at home, have been as

much struck with their patient, pliant, imitative dispositions; with their appearance and conformation so nearly human. Of the smallest sort of these animals we have had several, at different times, brought into this country, all nearly alike; but that observed by Dr. Tyson is the best known, having been described with the greatest exactness.

The animal which was described by that learned physician, was brought from Angola in Africa, where it had been taken in the internal parts of the country, in company with a female of the same kind that died by the way. The body was covered with hair, which was of a coal-black colour, more resembling human hair than that of brutes. It bore a still stronger similitude in its different lengths; for in those places where it is longest on the human species, it was also longest in this; as on the head, the upper lip, the chin, and the pubes. The face was like that of a man, the forehead larger, and the head round. The upper and lower jaw were not so prominent as in monkeys, but flat, like those of a man. The ears were like those of a man in most respects; and the teeth had more resemblance to the human than those of any other creature. The bendings of the arms and legs were just the same as in a man; and, in short, the animal, at first view, presented a figure entirely human.

In order to discover its differences, it was necessary to make a closer survey; and then the imperfections of its form began to appear. The first obvious difference was in the flatness of the nose; the next, in the lowness of the forehead, and the wanting the prominence of the chin. The ears were proportionably too large; the eyes too close to each other; and the interval between the nose and mouth too great. The body and limbs differed, in the thighs being too short, and the arms too long; in the

thumb being too little, and the palm of the hand too narrow. The feet also were rather more like hands than feet; and the animal; if we may judge from the figure, bent too much upon its haunches.

When this creature was examined anatomically, a surprising similitude was seen to prevail in its internal conformation. It differed from man in the number of its ribs, having thirteen; whereas in man there are but twelve. The vertebræ of the neck also were shorter, the bones of the pelvis narrower, the orbits of the eyes were deeper, the kidneys were rounder, the urinary and gall bladders were longer and smaller, and the ureters of a different figure. Such were the principal distinctions between the internal parts of this animal and those of man; in almost every thing else they were entirely and exactly the same, and discovered an astonishing congruity. Indeed, many parts were so much alike in conformation, that it might have excited wonder how they were productive of such few advantages. The tongue, and all the organs of the voice were the same, and yet the animal was dumb; the brain was formed in the same manner with that of man, and yet the creature wanted reason: an evident proof (as M. Buffon finely observes) that no disposition of matter will give mind; and that the body, how nicely soever formed, is formed in vain, when there is not infused a soul to direct its operations.

Having thus taken a comparative view of this creature with man, what follows may be necessary to complete the general description. This animal was very hairy all behind, from the head downwards; and the hair so thick, that it covered the skin almost from being seen: but in all parts before, the hair was much thinner, the skin every where appeared, and in some places it was almost bare. When it went on all fours, as it was sometimes seen

to do, it appeared all hairy; when it went erect, it appeared before less hairy, and more like a man. Its hair, which in this particular animal was black, much more resembled that of men than the fur of brutes; for, in the latter, besides their long hair, there is usually a finer and shorter intermixed: but in the ourang outang it was all of a kind; only about the pubes the hair was grayish, seemed longer, and somewhat different; as also on the upper lip and chin, where it was grayish, like the hair of a beard. The face, hands, and soles of the feet, were without hair, and so was most part of the forehead; but down the sides of the face the hair was thick, it being there about an inch and a half long, which exceeded that on any other part of the body. In the palms of its hands were remarkable those lines which are usually taken notice of in palmistry; and, at the tips of the fingers, those spiral lines observed in man. The palms of the hands were as long as the soles of the feet, and the toes upon these were as long as the fingers; the middle toe was the longest of all, and the whole foot differed from the human. The hinder feet being thus formed as hands, the animal often used them as such; and, on the contrary, now and then made use of its hands instead of feet. The breasts appeared small and shrivelled, but exactly like those of a man: the navel also appeared very fair, and in exact disposition, being neither harder nor more prominent than what is usually seen in children. Such is the description of this extraordinary creature; to which little has been added by succeeding observers, except that the colour of the hair is often found to vary: in that described by Edwards it was of a reddish-brown.

From a picture so like that of the human species, we are naturally led to expect a corresponding mind; and it is certain that such of these animals as have

been shown in Europe, have discovered a degree of imitation beyond what any quadruped can arrive at.

That of Tyson was a gentle, fond, harmless creature. In its passage to England, those that it knew on ship-board it would embrace with the greatest tenderness, opening their bosoms, and clasping its hands about them. Monkeys of a lower species it held in utter aversion; it would always avoid the place where they were kept in the same vessel, and seemed to consider itself as a creature of higher extraction. After it was taken, and a little used to wear clothes, it grew very fond of them; a part it would put on without any help, and the rest it would carry in its hands to some of the company for their assistance. It would lie in a bed, place its head on the pillow, and pull the clothes upwards, as a man would do.

That which was seen by Edwards, and described by Buffon, showed even a superior degree of sagacity. It walked like all of its kind upon two legs, even though it carried burdens. Its air was melancholy, and its deportment grave. Unlike the baboon or monkey, whose motions are violent, and appetites capricious, who are fond of mischief, and obedient only from fear, this animal was slow in its motions, and a look was sufficient to keep it in awe. I have seen it, says M. Buffon, give its hand to show the company to the door: I have seen it sit at table, unfold its napkin, wipe its lips, make use of the spoon, and the fork to carry the victuals to its mouth, pour out its drink into a glass, touch glasses when invited, take a cup and saucer and lay them on the table, put in sugar, pour out its tea, leave it to cool before drinking; and all this without any other instigation than the signs or the command of its master, and often of its own accord. It was gentle and inoffensive; it even approached strangers with respect,

and came rather to receive caresses than to offer injuries. It was particularly fond of sugared comfits, which every body was ready to give it; and, as it had a defluxion upon the breast, so much sugar contributed to increase the disorder, and shorten its life. It continued at Paris but one summer, and died in London. It ate indiscriminately of all things, but it preferred dry and ripe fruits to all other aliments, It would drink wine, but in small quantities, and gladly left it for milk, tea, or any other sweet liquor.

Such these animals appeared when brought into Europe. However, many of their extraordinary habits were probably the result of education, and we are not told how long the instructions they received for this purpose were continued. But we learn from another account, that they take but a very short time to come to a great degree of imitative perfection. M. Le. Brosse bought two young ones, that were but a year old, from a Negro; and these at that early age discovered an astonishing power of imitation.* They even then sat at the table like men, ate of every thing without distinction, made use of their knife, spoon, and fork, both to eat their meat and help themselves. They drank wine and other liquors. When carried on ship-board, they had signs for the cabin boys expressive of their wants; and whenever these neglected attending upon them as they desired, they instantly flew into a passion, seized them by the arm, bit them, and kept them down. The male was sea-sick, and required attendance like a human creature; he was even twice bled in the arm; and every time afterwards, when he found himself out of order, he showed his arm, as desirous of being relieved by bleeding.

Pyrard relates, that in the province of Sierra Leone, in Africa, there are a kind of apes, called Ba-

* As quoted by Buffon, vol. xxviii, p. 77.

ris, which are strong and muscular, and which, if properly instructed when young, serve as very useful domestics. They usually walk upright; they pound at a mortar; they go to the river to fetch water; this they carry back in a little pitcher, on their heads; but if care be not taken to receive the pitcher at their return, they let it fall to the ground, and then, seeing it broken, they begin to lament and cry for their loss. Le Comte's account is much to the same purpose, of an ape which he saw in the Straits of Molucca. "It walked upon its two hind-feet, which it bent a little, like a dog that had been taught to dance. It made use of its hands and arms as we do. Its visage was not much more disagreeable than that of a Hottentot; but the body was all over covered with a woolly hair of different colours. As to the rest, it cried like a child; all its outward actions were so like the human, and the passions so lively and significant, that dumb men could scarcely better express their conceptions and desires. It had also that expression of passion or joy which we often see in children, stamping with its feet and striking them against the ground, to show its spite, or when refused any thing it passionately longed for. Although these animals," continues he, "are very big, for that I saw was four feet high, their nimbleness is incredible. It is a pleasure beyond expression to see them run up the tackling of a ship, where they sometimes play as if they had a knack of vaulting peculiar to themselves, or as if they had been paid, like our rope-dancers, to divert the company. Sometimes, suspended by one arm, they poise themselves, and then turn all of a sudden round about a rope, with as much quickness as a wheel, or a sling put into motion. Sometimes holding the rope successively with their long fingers, and letting their whole body fall into the air, they run

taken by one of these, and carried into the woods, continued there a whole year, without receiving any injury.* From another traveller we learn, that these animals often attempt to surprise the female Negroes as they go into the woods, and frequently keep them against their wills for the pleasure of their company; feeding them very plentifully all the time. He assures that he knew a woman of Loango that had lived among these animals for three years. They grow from six to seven feet high, and are of unequalled strength. They build sheds, and make use of clubs for their defence. Their faces are broad, their noses flat, their ears without a tip, their skins are more bright than that of a mulatto, and they are covered on many parts of the body with long and tawny-coloured hair. Their belly is large, their heels flat, and yet rising behind. They sometimes walk upright, and sometimes upon all-fours, when they are fantastically disposed.

From this description of the ourang outang, we perceive at what a distance the first animal of the brute creation is placed from the very lowest of the human species. Even in countries peopled with savages, this creature is considered as a beast; and in those very places where we might suppose the smallest difference between them and mankind, the inhabitants hold it in the greatest contempt and detestation. In Borneo, where this animal has been said to come to its greatest perfection, the natives hunt it in the same manner as they pursue the elephant or the lion, while its resemblance to the human form procures it neither pity nor protection. The gradations of nature in the other parts of nature are minute and insensible: in the passage from quadrupeds to fishes we can scarcely tell where the quadruped ends and the fish begins; in the descent

* Le Brosse, as quoted by Buffon, vol. xxviii, p. 70.

from beasts to insects we can hardly distinguish the steps of the progression; but in the ascent from brutes to man, the line is strongly drawn, well marked and unpassable. It is in vain that the ourang outang resembles man in form, or imitates many of his actions; he still continues a wretched, helpless creature, pent up in the most gloomy part of the forest, and, with regard to the provision for his own happiness, inferior even to the elephant or the beaver in sagacity. To us, indeed, this animal seems much wiser than it really is.. As we have long been used to measure the sagacity of all actions by their similitude to our own, and not their fitness to the animal's way of living, we are pleased with the imitations of the ape, even though we know they are far from contributing to the convenience of its situation. An ape, or a quadruped, when under the trammels of human education, may be an admirable object for human curiosity, but is very little advanced by all its learning in the road to its own felicity. On the contrary, I have never seen any of these long instructed animals that did not, by their melancholy air, appear sensible of the wretchedness of their situation. Its marks of seeming sagacity were merely relative to us, and not to the animal; and all its boasted wisdom was merely of our own making.

There is, in fact, another circumstance relative to this animal, which ought not to be concealed. I have many reasons to believe that the most perfect of the kind are prone, like the rest of the quadruped creation, and only owe their erect attitude to human education. Almost all the travellers who speak of them, mention their going sometimes upon all-fours, and sometimes erect. As their chief residence is among trees, they are without doubt usually seen erect while they are climbing; but it is probable that their efforts to escape upon the ground are by running upon the

hands and feet together. Schouten, who mentions their education, tells us that they are taken in traps, and taught in the beginning to walk upon their hind-legs, which certainly implies that in a state of nature they run upon all-fours. Add to this, that when we examine the palms of their hands and the soles of their feet, we find both equally callous and beaten; a certain proof that both have been equally used. In those hot countries where the apes are known to reside, the soles of the Negroes' feet, who go barefoot, are covered with a skin above an inch thick; while their hands are as soft as those of an European. Did the apes walk in the same manner, the same exercise would have furnished them with similar advantages, which is not the case. Besides all this, I have been assured by a very credible traveller, that these animals naturally run in the woods upon all-fours; and when they are taken, their hands are tied behind them, to teach them to walk upright. This attitude they learn after some time; and thus instructed, they are sent into Europe to astonish the speculative with their near approaches to humanity, while it is never considered how much is natural, and how much has been acquired in the savage schools of Benin and Angola.

The animal next to these, and to be placed in the same class, is the Ape, properly so called, or the Pithekos of the ancients. This is much less than the former, being not above a foot and a half high, but walks erect, is without a tail, and is easily tamed.

Of this kind also is the Gibbon, so called by Buffon, or the Long-armed Ape, which is a very extraordinary and remarkable creature. It is of different sizes, being from two feet to four feet high. It walks erect, is without a tail, has a face resembling that of a man, with a circle of bushy hair all round the visage; its eyes are large, and sunk in its head; its

1. Malbrouck _ 2. Mandrel _ 3. Macacco _ 4. Wanderow

face tanned, and its ears exactly proportioned. But that in which it chiefly differs from all others of the monkey tribe is the extraordinary length of its arms, which, when the animal stands erect, are long enough to reach the ground; so that it can walk upon all-fours, and yet keep its erect posture at the same time. This animal, next to the ourang outang and the ape, most nearly resembles mankind, not only in form, but in gentle manners and tractable disposition. It is a native of the East Indies, and particularly found along the coasts of Coromandel.

The last of the ape kind is the Cynocephalus, or the Magot of Buffon. This animal wants a tail, like the former, although there is a small protuberance at that part, which yet is rather formed by the skin than the bone. It differs also in having a large callous red rump. The face is prominent, and approaches more to that of quadrupeds than of man. The body is covered with a brownish hair, and yellow on the belly. It is about three feet and a half, or four feet high, and is a native of most parts of Africa and the East. As it recedes from man in its form, so also it appears different in its dispositions, being sullen, vicious, and untractable.*

THE BABOON.

Descending from the more perfect of the monkey kinds, we come to the baboon and its varieties; a large, fierce, and formidable race, that mixing the figure of the man and the quadruped in their conformation, seems to possess only the defects of both; the petulance of the one, and the ferocity of the other.

* Omnes femellæ hujusce et precedentium, ut et fere sequentium specierum, menstruali patiuntur fluxu sicut in feminis.

These animals have a short tail, a prominent face, with canine teeth larger than those of men, and callosities on the rump.* In man, the physiognomy may deceive, and the figure of the body does not always lead to the qualities of the mind; but in animals we may always judge of their dispositions by their looks, and form a just conjecture of their internal habits, from their external form. If we compare the nature of the ape and the baboon by this easy rule, we shall at once be led to pronounce that they greatly differ in their dispositions, and that the latter are infinitely more fierce, savage, and malicious, than the former. The ourang outang, that so nearly resembles man in its figure, approaches also nearest in the gentleness of its manners and the pliancy of its temper. The cynocephalus, that of all other apes is most unlike man in form, and approaches nearer the dog in face, resembles also the brute in nature, being wild, restless, and impelled by a frightful impetuosity. But the baboon, who is still more remote, and resembles man only in having hands, who, from having a tail, a prominent face, and sharp claws, approaches more nearly to the savage tribe, is every way fierce, malicious, ignorant and untractable.

The baboon, properly so called, is from three to four feet high, very strong built, with a thick body and limbs, and canine teeth, much longer than those of men. It has large calosities behind, which are quite naked and red. Its tail is crooked and thick, and about seven or eight inches long. Its snout, for it can hardly be called a face, is long and thick, and on each side of its cheeks it has a pouch, into which, when satiated with eating, it puts the remainder of its provisions. It is covered with long thick hair of a reddish-brown colour, and pretty uniform over the whole body. It walks more commonly upon all-

* Buffon, vol. xxxviii, p. 183.

fours than upright, and its hands as well as its feet are armed with long sharp claws, instead of the broad round nails of the ape kind.

An animal thus made for strength, and furnished with dangerous weapons, is found in fact to be one of the most formidable of the savage race, in those countries where it is bred. It appears, in its native woods, to be impelled by two opposite passions; a hatred for the males of the human species and a desire for women. Were we assured of these strange oppositions in its disposition from one testimony alone, the account might appear doubtful; but as it comes from a variety of the most credible witnesses, we cannot refuse our assent. From them, therefore, we learn, that these animals will often assail women in a body, and force them into the woods, where they keep them against their will, and kill them when refractory. From the Chevalier Forbin we learn, that in Siam whole troops of these will often sally forth from their forests, and attack a village, when they know the men are engaged in their rice harvest. They are on such occasions actuated as well by desire as by hunger; and not only plunder the houses of whatever provisions they can find, but endeavour to force the women. These, however, as the Chevalier humorously relates, not at all liking either the manners or the figure of the paltry gallants, boldly stand on their defence, and with clubs, or whatever other arms they can provide, instead of answering their caresses, oblige their ugly suitors to retreat, not, however, before they have damaged or plundered every thing eatable they can lay their hands on.

At the Cape of Good Hope they are less formidable, but to the best of their power equally mischievous. They are there under a sort of natural discipline, and go about whatever they undertake with

surprising skill and regularity. When they set about robbing an orchard or a vineyard, for they are extremely fond of grapes, apples, and ripe fruit, they do not go singly to work, but in large companies, and with preconcerted deliberation. On these occasions, a part of them enter the enclosure, while one is set to watch. The rest stand without the fence, and form a line, reaching all the way from their fellows within to their rendezvous without, which is generally in some craggy mountain. Every thing being thus disposed, the plunderers within the orchard throw the fruit to those that are without as fast as they can gather it; or, if the wall or hedge be high, to those that sit on the top, and these hand the plunder to those next them on the other side. Thus the fruit is pitched from one to another all along the line, till it is safely deposited at their head-quarters. They catch it as readily as the most skilful tennis player can a ball; and while the business is going forward, which they conduct with great expedition, a most profound silence is observed among them. Their sentinel, during this whole time, continues upon the watch, extremely anxious and attentive; but if he perceives any one coming, he instantly sets up a loud cry, and at this signal the whole company scamper off. Nor yet are they at any time willing to leave the place empty-handed; for if they be plundering a bed of melons, for instance, they go off with one in their mouths, one in their hands, and one under their arm. If the pursuit is hot, they drop first that from under their arm, and then that from their hand; and, if it be continued, they at last let fall that which they had hitherto kept in their mouths.

The natives of the Cape often take the young of these animals, and feeding them with sheep and goat's milk, accustom them to guard their houses,

which duty they perform with great punctuality. Those, however, that have been brought into Europe are headstrong, rude, and untractable. Dogs and cats, when they have done any thing wrong, will run off, but these seem careless, and insensible of the mischief they do; and I have seen one of them break a whole table of china, as it should seem by design, without appearing in the least conscious of having done amiss. It was not, however, in any respect so formidable as that described by M. Buffon, of which he gives the following description: "It was not," says he, "extremely ugly, and yet it excited horror. It continually appeared in a state of savage ferocity, gnashing its teeth, flying at the spectators, and furiously restless. It was obliged to be confined in an iron cage, the bars of which it so forcibly attempted to break, that the spectators were struck with apprehension. It was a sturdy bold animal, whose short limbs and powerful exertions showed vast strength and agility. The long hair with which it was covered seemed to add to its apparent abilities; which, however, were in reality so great, that it could easily overcome a single man, unless armed. As to the rest, it forever appeared excited by that passion which renders the mildest animals at intervals furious. Its lasciviousness was constant, and its satisfactions particular. Some others also of the monkey kind showed the same degree of impudence, and particularly in the presence of women; but, as they were less in size, their petulance was less obvious, and their insolence more easily corrected."

But, however violent the desires of these animals may be, they are not found to breed in our climate. The female brings forth usually but one at a time, which she carries in her arms, and in a peculiar manner clinging to her breast. As to the rest, these animals are not at all carnivorous; they principally

feed upon fruits, roots, and corn, and generally keep together in companies. The internal parts are more unlike those of man than of quadrupeds, particularly the liver, which is like that of a dog, divided into six lobes. The lungs are more divided, the guts in general are shorter, and the kidneys rounder and flatter.

The largest of the baboon kind is the Mandril; an ugly disgusting animal, with a tail shorter than the former, though of a much larger stature, being from four to five feet high. The muzzle is still longer than that of the preceding; it is of a bluish colour, and strongly marked with wrinkles, which give it a frightful appearance. But what renders it truly loathsome is, that from the nose there is always seen issuing a snot, which the animal takes care at intervals to lick off with its tongue, and swallow. It is a native of the Gold Coast: it is said to walk more frequently erect than upon all-fours; and when displeased, to weep like a child. There was one of them shown in England some years ago. It seemed tame, but stupid; and had a method of opening its mouth, and blowing at such as came too near.

The Wanderow is a baboon rather less than the former, with the body less compact and muscular, and the hinder parts seemingly more feeble. The tail is from seven to eight inches long; the muzzle is prominent as in the rest of this kind; but what particularly distinguishes it is a large long white head of hair, together with a monstrous white beard, coarse, rough, and descending; the colour of the rest of the body being brown or black. As to the rest, in its savage state it is equally fierce with the others; but with a proper education it seems more tractable than most of its kind, and is chiefly seen in the woods of Ceylon and Malabar.

The Maimon of Buffon, which Edwards calls the

Pigtail, is the last of the baboons, and in size rather approaches the monkey, being no larger than a cat. Its chief distinction, besides its prominent muzzle, like a baboon, is in the tail, which is about five or six inches long, and curled up like that of a hog; from which circumstance, peculiar to this animal, our English naturalist gave it the name. It is a native of Sumatra, and does not well endure the rigours of our climate. Edwards, however, kept one of them a year in London; and another of them happening at the same time to be exposed in a show of beasts, he brought the two exiles together, to see if they would claim or acknowledge their kindred. The moment they came into each other's presence, they testified their mutual satisfaction, and seemed quite transported at the interview.

THE MONKEY.

The varieties in the larger tribes of the Monkey kind are but few; in the Ape we have seen but four, and in the Baboon about as many. But when we come to the smaller class, the differences among them seem too tedious for enumeration. These, as was observed in the beginning, are all small in stature, and with long tails, by which they are distinguished from the preceding that entirely want the tail, or are large and have but a short one. The varieties in the form and colour of dogs, or squirrels, is nothing to what are found among monkeys of the smaller kind. Bosman mentions above fifty sorts on the Gold Coast alone, and Smith confirms the account. Coudamine asserts that it would take up a volume to describe the differences of these to be found along the river Amazons; and we are sure that

every one of these is very different from those on the African coast. Naturalists, however, have undertaken to make a catalogue of their numbers: and they either transmit their descriptions from one to another, or only enumerate those few that have found their way to Europe, and have fallen within the narrow circle of their own observation. But though it may be proper enough to describe such as fall under notice, it is certainly wrong to offer a scanty catalogue as complete, and to induce the reader to suppose he sees a picture of the whole group of these animals, when he is only presented with a small part of the number. Such, therefore, as are fond of the reputation of adding new descriptions to the stock of natural history, have here a wide, though surely a barren field to enlarge in; and they will find it no difficult matter, by observing the various animals of this kind that are from time to time brought from their native coasts to this country, to indulge in description, and to ring the changes upon all the technical terms with which this most pleasing science is obscured and rendered disgusting. For my own part, I will spare the reader and myself the trouble of entering into an elaborate description of each; content with observing once more, that their numbers are very great, and their differences very trifling. There is scarcely a country in the tropical climates that does not swarm with them, and scarcely a forest that is not inhabited by a race of monkeys distinct from all others. Every different wood along the coast of Africa may be considered as a separate colony of monkeys, differing from those of the next district in colour, in size, and malicious mischief. It is indeed remarkable that the monkeys of two cantons are never found to mix with each other, but rigorously to observe a separation; each forest produces only its own; and these guard their limits from

the intrusion of all strangers of a different race from themselves. In this they somewhat resemble the human inhabitants of the savage nations among whom they are found, where the petty kingdoms are numerous, and their manners opposite. There, in the extent of a few miles, the traveller is presented with men speaking different languages, professing different religions, governed by different laws, and only resembling each other in their mutual animosity.

In general, monkeys of all kinds, being less than the baboon, are endued with less powers of doing mischief. Indeed, the ferocity of their nature seems to diminish with their size; and when taken wild in the woods, they are sooner tamed, and more easily taught to imitate man than the former. More gentle than the baboon, and less grave and sullen than the ape, they soon begin to exert all their sportive mimickries, and are easily restrained by correction. But it must be confessed that they will do nothing they are desired without beating; for, if their fears be entirely removed, they are the most insolent and headstrong animals in nature.

In their native woods they are not less the pests of man than of other animals. The monkeys says a traveller,* are in possession of every forest where they reside, and may be considered as the masters of the place. Neither the tiger, nor the lion itself, will venture to dispute the dominion, since these, from the tops of trees, continually carry on an offensive war, and by their agility escape all possibility of pursuit. Nor have the birds less to fear from their continual depredations; for, as these harmless inhabitants of the wood usually build upon trees, the monkeys are forever on the watch to find out and rob their nests; and such is their petulant delight in mischief, that they will fling their eggs against the

* Description Historique de Macagar, p. 51.

ground when they want appetite or inclination to devour them.

There is but one animal in all the forest that ventures to oppose the monkey, and that is the serpent. The larger snakes are often seen winding up the trees where the monkeys reside; and, when they happen to surprise them sleeping, swallow them whole, before the little animals have time to make a defence. In this manner, the two most mischievous kinds in all nature keep the whole forest between them; both equally formidable to each other, and for ever employed in mutual hostilities. The monkeys in general inhabit the tops of the trees, and the serpents cling to the branches nearer the bottom; and in this manner they are for ever seen near each other, like enemies in the same field of battle. Some travellers, indeed, have supposed that their vicinity rather argued their mutual friendship, and that they united in this manner to form an offensive league against all the rest of animated nature.* "I have seen these monkeys," says Labat, "playing their gambols upon those very branches on which the snakes were reposing, and jumping over them without receiving any injury, although the serpents of that country were naturally vindictive, and always ready to bite whatever disturbed them." These gambols, however, were probably nothing more than the insults of an enemy that was conscious of its own safety; and the monkeys might have provoked the snake in the same manner as we often see sparrows twitter at a cat. However this be, the forest is generally divided between them; and these woods, which nature seems to have embellished with her richest magnificence, rather inspire terror than delight, and chiefly serve as retreats for mischief and malignity.

The enmity of these animals to mankind is part-

* Labat, Relat. de l' Afriq. Occident. p. 317.

ly ridiculous and partly formidable. They seem, says Le Compte and others, to have a peculiar instinct in discovering their foes; and are perfectly skilled, when attacked, in mutually defending and assisting each other. When a traveller enters among these woods, they consider him as an invader upon their dominions, and join all to repel the intrusion. At first they survey him with a kind of insolent curiosity. They jump from branch to branch, pursue him as he goes along, and make a loud chattering, to call the rest of their companions together. They then begin their hostilities by grinning, threatening, and flinging down the withered branches at him, which they break from the trees; they even take their excrements in their hands, and throw them at his head. Thus they attend him wherever he goes, jumping from tree to tree with such amazing swiftness, that the eye can scarcely attend their motions. Although they take the most desperate leaps, yet they are seldom seen to come to the ground, for they easily fasten upon the branches that break their fall, and stick, either by their hands, feet, or tail, wherever they touch. If one of them happens to be wounded, the rest assemble round, and clap their fingers into the wound, as if they were desirous of sounding its depth. If the blood flows in any quantity, some of them keep it shut up, while others get leaves, which they chew, and thrust into the opening: however extraordinary this may appear, it is asserted to be often seen, and to be strictly true. In this manner they wage a petulant, unequal war; and are often killed in numbers before they think proper to make a retreat. This they effect with the same precipitation with which they at first come together. In this retreat the young are seen clinging to the back of the female, with which she jumps away, seemingly unembarrassed by the burden.

The curiosity of the Europeans has, in some measure induced the natives of the places where these animals reside, to catch or take them alive by every art they are able. The usual way in such case is to shoot the female as she carries her young, and then both, of course, tumble to the ground. But even this is not easily performed; for if the animal be not killed outright, it will not fall, but clinging to some branch, continues even when dead, its former grasp, and remains on the tree where it was shot, until it drops off by putrefaction. In this manner it is totally lost to the pursuer; for to attempt climbing the tree to bring either it or the young one down, would probably be fatal, from the number of serpents that are hid among the branches. For this reason the sportsman always takes care to aim at the head; which if he hits, the monkey falls directly to the ground, and the young one comes down at the same time, clinging to its dead parent.

The Europeans along the coasts of Guinea often go into the woods to shoot monkeys; and nothing pleases the Negroes more than to see these animals drop, against which they have the greatest animosity. They consider them, and not without reason, as the most mischievous and tormenting creatures in the world; and are happy to see their numbers destroyed, upon a double account, as well because they dread their devastations, as because they love their flesh. The monkey, which is always skinned before it is eaten, when served up at a Negro feast, looks so like a child, that an European is shocked at the very sight. The natives, however, who are not so nice, devour it as one of the highest delicacies, and assiduously attend our sportsmen to profit by the spoil. But what they are chiefly astonished at, is to see our travellers carefully taking the young ones alive, while they leave them the old ones, that are

certainly the most fit to be eaten. They cannot comprehend what advantage can arise to us from educating or keeping a little animal, that, by experience, they know to be equally fraught with tricks and mischief: some of them have even been led to suppose, that with a kind of perverse affection, we love only creatures of the most mischievous kinds; and having seen us often buy young and tame monkeys, they have taken equal care to bring rats to our factors, offering them for sale, and greatly disappointed at finding no purchasers for so hopeful a commodity.*

The negroes consider these animals as their greatest plague; and, indeed, they do incredible damage, when they come in companies to lay waste a field of Indian corn or rice, or a plantation of sugar-canes. They carry off as much as they are able; and they destroy ten times more than they bear away. Their manner of plundering is pretty much like that of the baboons, already mentioned, in a garden. One of them stands sentinel upon a tree while the rest are plundering, carefully and cautiously turning on every side, but particularly to that on which there is the greatest danger; in the mean time, the rest of the spoilers pursue their work with great silence and assiduity. They are not contented with the first blade of corn, or the first cane that they happen to lay their hands on; they first pull up such as appear most alluring to the eye, they turn it round, examine, compare it with others, and if they find it to their mind, stick it under one of their shoulders. When in this manner they have got their load, they begin to think of retreating: but if it should happen that the owners of the field appear to interrupt their depredations, their faithful sentinel instantly gives notice, by crying out, *Houp, houp, houp!* which the rest perfectly understand, and all at once throwing

* Labat, Relat. de l'Afriq. Occident. p. 317.

down the corn they hold in their left hands, scamper off upon three legs, carrying the remainder in the right. If they are still hotly pursued, they then are content to throw down their whole burden, and to take refuge among their woods, on the top of which they remain in perfect security.

Were we to give faith to what some travellers assure us, of the government, policies and subordination of these animals, we might perhaps be taxed with credulity; but we have no reason to doubt that they are under a kind of discipline, which they exercise among each other. They are generally seen to keep together in companies, to march in exact order, and to obey the voice of some particular chieftain, remarkable for his size and gravity. One species of these, which M. Buffon calls the Ouarine, and which are remarkable for the loudness and the distinctness of their voice, are still more so for the use to which they convert it. "I have frequently been a witness," says Margrave, "of their assemblies and deliberations. Every day, both morning and evening, the ouarines assemble in the woods to receive instructions. When all come together, one among the number takes the highest place on a tree, and makes a signal with his hand to the rest to sit round, in order to hearken. As soon as he sees them placed, he begins his discourse with so loud a voice, and yet in a manner so precipitate, that to hear him at a distance, one would think the whole company were crying out at the same time: however, during that time, one only is speaking, and all the rest observe the most profound silence. When this has done, he makes a sign with the hand for the rest to reply; and at that instant they raise their voices together, until by another signal of the hand, they are enjoined silence. This they as readily obey; till, at last, the whole assembly breaks up, after hearing a repetition of the same preachment."

The chief food of the monkey tribe is fruits, the buds of trees, or succulent roots and plants. They all, like man, seem fond of sweets; and particularly the pleasant juice of the palm-tree and the sugar-cane. With these the fertile regions in which they are bred seldom fail to supply them; but when it happens that these fail, or that more nourishing food becomes more agreeable, they eat insects and worms; and, sometimes, if near the coasts, descend to the sea-shore, where they eat oysters, crabs, and shell-fish. Their manner of managing an oyster is extraordinary enough; but it is too well attested to fail of our assent. As the oysters in the tropical climates are generally larger than with us, the monkeys, when they go to the sea-side, pick up a stone, and clap it between the opening shells; this prevents them from closing, and the monkey then eats the fish at his ease. They often also draw crabs from the water, by putting their tail to the hole where that animal takes refuge, and the crab fastening upon it, they withdraw it with a jerk, and thus pull their prey upon shore. This habit of laying traps for other animals, makes them very cautious of being entrapped themselves; and I am assured, by many persons of credit, that no snare, how nicely baited soever, will take the monkey of the West India islands; for having been accustomed to the cunning of man, it opposes its natural distrust to human artifice.

The monkey generally brings forth one at a time, and sometimes two. They are rarely found to breed when brought over into Europe; but of those that do, they exhibit a very striking picture of parental affection. The male and female are never tired of fondling their young one. They instruct it with no little assiduity; and often severely correct it, if stubborn, or disinclined to profit by their example: they

hand it from one to the other, and when the male has done showing his regard, the female takes her turn. When wild in the woods, the female, if she happens to have two, carries one on her back, and the other in her arms: that on her back clings very closely, clasping its hands round her neck, and its feet about her middle; when she wants to suckle it, she then alters their position, and that which has been fed gives place to the other, which she takes in her arms. It often happens that she is unable to leap from one tree to another, when thus loaded; and upon such occasions, their dexterity is very surprising. The whole family form a kind of chain, locking tail in tail, or hand in hand, and one of them holding the branch above, the rest swing down, balancing to and fro, like a pendulum, until the undermost is enabled to catch hold of the lower branches of some neighbouring tree. When the hold is fixed below, the monkey lets go that which was above, and thus comes undermost in turn; but, creeping up along the chain attains the next branches, like the rest; and thus they all take possession of the tree, without ever coming to the ground.

When in a state of domestic tameness, those animals are very amusing, and often fill up a vacant hour when other entertainment is wanting. There are few that are not acquainted with their various mimicries, and their capricious feats of activity. But it is generally in company with other animals of a more simple disposition that their tricks and superior instincts are shown; they seem to take a delight in tormenting them, and I have seen one of them amusing itself for hours together, in imposing upon the gravity of a cat. Erasmus tells us of a large monkey, kept by Sir Thomas More, that, one day diverting itself in his garden, where some tame rabbits were kept, played several of his usual pranks

among them, while the rabbits scarcely well knew what to make of their new acquaintance; in the mean time, a weasel, that came for very different purposes than those of entertainment, was seen peering about the place in which the rabbits were fed, and endeavouring to make its way, by removing a board that closed their hutch. While the monkey saw no danger, it continued a calm spectator of the enemy's efforts; but just when, by long labour, the weasel had effected its purpose, and had removed the board, the monkey stept in, and, with the utmost dexterity, fastened it again in its place, and the disappointed weasel was too much fatigued to renew its operations. To this I will only add what Father Carli, in his history of Angola, assures us to be true. In that horrid country, where he went to convert the savage natives to Christianity, and met with nothing but distress and disappointment; while his health was totally impaired by the raging heats of the climate, his patience exhausted by the obstinacy of the stupid natives, and his little provisions daily plundered, without redress; in such an exigency he found more faithful services from the monkeys than the men: these he had taught to attend him, to guard him while sleeping against thieves and rats, to comb his head, to fetch his water; and he asserts, that they were even more tractable than the human inhabitants of the place. It is indeed remarkable, that in those countries where the men are most barbarous and stupid, the brutes are most active and sagacious. It is in the torrid tracts, inhabited by barbarians, that such various animals are found with instincts so nearly approaching reason. The savages both of Africa and America accordingly suppose monkeys to be men; idle, slothful, rational beings; capable of speech and conversation; but obstinately dumb, for fear of being compelled to labour.

As of all savages those of Africa are the most brutal; so, of all countries, the monkeys of Africa are the most expert and entertaining. The monkeys of America are, in general, neither so sagacious nor so tractable, nor is their form so nearly approaching that of man. The monkeys of the new continent may be very easily distinguished from those of the old, by three marks. Those of the ancient continent are universally found to have a naked callous substance behind, upon which they sit, which those of America are entirely without; those also of the ancient continent have the nostrils differently formed, more resembling those of men, the holes opening downward, whereas the American monkeys have them opening on each side; those of the ancient world have pouches on each side the jaw, into which they put their provisions, which those of America are without; lastly, none of the monkeys of the ancient continent hang by the tail, which many of the American sorts are known to do. By these marks the monkeys of either continent may be readily distinguished from each other, and prized accordingly. The African monkey, as I am assured, requires a longer education, and more correction, than that of America; but it is at last found capable of more various powers of imitation, and shows a greater degree of cunning and activity.

M. Buffon, who has examined this race of imitative beings with greater accuracy than any other naturalist before him, makes but nine species of monkeys belonging to the ancient continent, and eleven belonging to the new. To all these he gives the names which they go by in their respective countries; which undoubtedly is the method least liable to error, and the most proper for imitation.

Of the monkeys of the ancient continent, the first he describes is the Mocaguo; somewhat resembling

1. Chinese Bonnet. 2. Mangabey. 3. Callitrix. 4. Moustac.

a baboon in size, strength of body, and a hideous wrinkled visage: it differs, however, in having a very long tail, which is covered with tufted hair. It is a native of Congo.

The second is the Patas, which is about the same size with the former; but differs in having a longer body, and a face less hideous: it is particularly remarkable for the colour of its hair, which is of a red so brilliant that the animal looks as if it were actually painted. It is usually brought from Senegal and by some called the Red African Monkey.

The third of the ancient continent is the Malbrouk; of which he supposes the monkey which he calls the Bonnet Chinois to be a variety. The one is remarkable for a long tail, and long beard; the other for a cap of hair that covers the crown of the head, from whence it takes the name. Both are natives of the East Indies; and the Bramins, who extend their charity to all the brute creation, have hospitals for such of them as happen to be sick, or otherwise disabled.

The fourth of this kind is the Mangabey: this may be distinguished from all others by its eye-lids, which are naked, and of a striking whiteness. It is a native of Madagascar.

The fifth is the Mona, or the Cephus of the ancients: it is distinguished by its colour, which is variegated with black and red; and its tail is of an ash colour, with two white spots on each side at its insertion. It is a native of the northern parts of Africa.

The sixth is the Callitrix, or Green Monkey of St. Iago; distinguished by its beautiful green colour on the back, its white breast and belly, and its black face.

The seventh is the Moustoc, or White Nose; distinguished by the whiteness of its lips, from whence it has received its name, the rest of the face being

of a deep blue. It is a native of the Gold Coast, and a very beautiful little animal.

The eighth is the Talapoin; and may be distinguished as well by its beautiful variety of green, white, and yellow hair, as by that under the eyes being of a greater length than the rest. It is supposed to be a native of Africa and the East.

The ninth and last of the monkeys of the ancient continent is the Douc, so called in Cochin China, of which country it is a native. The douc seems to unite the characters of all the former together: with a long tail, like the monkey; of a size as large as the baboon; and with a flat face, like the ape: it even resembles the American monkeys, in having no callosity on its posteriors. Thus it seems to form the shade by which the monkeys of one continent are linked with those of the other.

Next come the monkeys of the new continent, which, as hath been said, differ from those of the old, in the make of their nostrils, in their having no callosity on their posteriors, and in their having no pouches on each side of the jaw. They differ also from each other, a part of them making no use of their tails to hang by; while others of them have the tail very strong and muscular, and serving by way of a fifth hand to hold by. Those with muscular holding tails are called Sapajous; those with feeble useless tails are called Sagoins. Of the sapajous there are five sorts; of the sagoins there are six.

The first of the sapajous is the Warine, or the Brasilian Guariba. This monkey is as large as a fox, with black long hair, and remarkable for the loudness of its voice: it is the largest of the monkey kind to be found in America.

The second is the Coaiti; which may be distinguished from the rest by having no thumb, and consequently but four fingers on the two fore paws. The

1. Douc – 2. Coaita – 3. Talopoin – 4. Grey Sajou.

1. Brown Sajou. 2. Saimiri. 3. Mico. 4. Sai. 5 Tamarin.

tail, however, supplies the defects of the hand; and with this the animal flings itself from one tree to another with surprising rapidity.

The third is the Sajou, distinguished from the rest of the sapajous by its yellowish, flesh-coloured face.

The fourth is the Sai. It is somewhat larger than the sajou, and has a broader muzzle. It is called also the Bewailer, from its peculiar manner of lamenting, when either threatened or beaten.

The fifth and last of the sapajou kind, or monkeys that hold by the tail, is the Saimiri, or Aurora, which is the smallest and most beautiful of all. It is of a fine orange colour, with two circles of flesh round the eyes. It is a very tender, delicate animal, and held in high price.

Of the sagoins with feeble tails, there are six kinds. The first and the largest is the Saki, or Cagui; so remarkable for the length of the hair on its tail, that it has been often termed the Fox-tailed Monkey. It is of different sizes; some being twice as large as others.

The second of this kind is the Tamain, which is usually black, with the feet yellow. Some, however, are found all over brown, spotted with yellow.

The third is the Wististi; remarkable for the large tufts of hair upon its face, and its annulated tail.

The fourth is the Marikina; with a mane round the neck, and a bunch of hair at the end of the tail, like a lion.

The fifth is called the Pinch; with the face of a beautiful black, and white hair that descends on each side of the face, like that of a man.

The last, least, and most beautiful of all, is the Mico, an animal too curiously adorned, not to demand a particular description; which is thus given of it by M. Condamine. "That," says he, "which

the governor of Para made me a present of, was the only one of its kind that was seen in the country. The hair on its body was of a beautiful silver colour, brighter than that of the most venerable human hair, while the tail was of a deep brown, inclining to blackness. It had another singularity, more remarkable than the former; its ears, its cheeks, and lips, were tinctured with so bright a vermillion, that one could scarcely be led to suppose that it was natural. I kept it a year; and it was still alive when I made this description of it, almost within sight of the coasts of France: all I could then do was to preserve it in spirits of wine, which might serve to keep it in such a state as to show that I did not in the least exaggerate in my description.

OF THE MAKI.

THE last of the monkey kind are the Makies; which have no other pretensions to be placed in this class, except that of having hands like the former, and making use of them to climb trees, or to pluck their food. Animals of the hare kind, indeed, are often seen to feed themselves with their fore-paws, but they can hold nothing in one of them singly, and are obliged to take up whatever they eat in both at once: but it is otherwise with the maki, as well as the monkey kinds; they seize their food with one hand, pretty much like a man, and grasp it with great ease and firmness. The maki, therefore, from this conformation in its hands, both before and behind, approaches nearly to the monkey kind; but in other respects, such as the make of the snout, the form of the ears, and the parts that distinguish the sexes, it entirely differs from them. There are many

F. Kearny Sc.

1 *Marikina* _ 2 *Wistili* _ 3 *Saki* _ 4 *Pinch.*

F. Kearney Sc.

1 . *Marikina* _ 2 *Wistiti* _ 3 *Saki* _ 4 *Pinch.*

different kinds of these animals; all varying from each other in colour or size, but agreeing in the human-like figure of their hands and feet, and in their long nose, which somewhat resembles that of a dog.* As most of these are bred in the depths of the forest, we know little more concerning them than their figure. Their way of living, their power of pursuit and escape, can only be supposed, from the analogy of their conformation, somewhat to resemble those of the monkey.

The first of this kind is the Mococo, a beautiful animal, about the size of a common cat, but the body and limbs slenderer, and of a longer make. It has a very long tail, at least double the length of its body; it is covered with fur, and marked alternately with broad rings of black and white. But what it is chiefly remarkable for, besides the form of its hands and feet, is the largeness of its eyes, which are surrounded with a broad black space: and the length of the hinder legs, which by far exceed those before. When it sleeps, it brings its nose to its belly, and its tail over its head. When it plays, it uses a sort of galloping, with its tail raised over its back, which keeps continually in motion. The head is covered with dark ash-coloured hair; the back and sides with a red ash-colour, and not so dark as on the head; and the whole glossy, soft, and delicate, smooth to the touch, and standing almost upright, like the pile of velvet. It is a native of Madagascar; appears to be a harmles gentle animal, and though it resembles the monkey in many respects, yet it has neither its malice nor its mischief: nevertheless, like the

[* This tribe of quadrupeds have four fore-teeth in the upper jaw, the intermediate ones being remote; and six long, compressed, parallel teeth in the under jaw: the dog-teeth are solitary, and the grinders somewhat lobated.—They differ so much, in shape and manners, from the monkey kind, that they are now generally distinguished by the name of *Lemur*.]

monkey, it seems to be always in motion, and moves, like all four-handed animals in an oblique direction.

A second of this kind, which is also a native of Madagascar, is the Mongooz, which is less than the former, with a soft, glossy robe, but a little curled. The nose also is thicker than that of the mococo; the eyes are black, with orange-coloured circles round the pupil; and the tail is of one uniform colour. As to the rest, it is found of various colours; some being black, others brown; and its actions somewhat resemble those of a monkey.

The Vari is much larger than either of the former; its hair is much longer, and it has a kind of ruff round the neck, consisting of very long hair, by which it may be easily distinguished from the rest. It differs also in its disposition, which is fierce and savage; as also in the loudness of its voice, which somewhat resembles the roaring of the lion. This also is a native of Madagascar.

To this tribe we may refer a little four-handed animal, of the Island of Ceylon, which M. Buffon calls the Lori, very remarkable for the singularity of its figure. This is, of all other animals, the longest in proportion to its size, having nine vertebræ in the loins, whereas other quadrupeds have only seven:* the body appears still the longer, by having no tail. In other respects it resembles those of the maki kind, as well in its hands and feet, as in its snout, and in the glossy qualities of its hair. It is about the size of a squirrel, and appears to be a tame, harmless, little animal.

* Buffon, vol. xxvi, p. 274.

R.E. Tucker Sc.

1. Paca — 2. Female Opposum — 3. Female Marmose
4. Cayopollin — 5. Male Opposum — 6. Male Marmose.

OF THE OPOSSUM, AND ITS KINDS.

To these four-handed animals of the ancient continent, we may add the four-handed animals of the new, that use their hands like the former, as well as their tails, and that fill up the chasm between the monkey tribe and the lower orders of the forest. As the maki kind in some measure seem to unite the fox and the monkey in their figure and size, so these seem to unite the monkey and the rat. They are all less than the former; they have long tails, almost bare of hair, and their fur, as well as their shape, seems to place them near the rat kind. Some have accordingly ranked them in that class; but their being four-handed is a sufficient reason for placing them in rear of the monkeys.

The first and the most remarkable of this tribe is the Opossum,* an animal found both in North and South America, of the size of a small cat. The head resembles that of a fox; it has fifty teeth in all, but two great ones in the midst, like those of a rat. The eyes are little, round, clear, lively, and placed upright; the ears are long, broad, and transparent, like those of the rat kind; its tail also increases the similitude, being round, long, a little hairy in the beginning, but quite naked towards the end. The fore-legs are short, being about three inches long, while those behind are about four. The feet are like hands, each having five toes or fingers, with white crooked nails, and rather longer behind than before. But it is particular in this animal, that the thumb on the hinder legs wants a nail; whereas the fingers are furnished with clawed nails as asual.

[* This animal has ten fore-teeth in the upper jaw; and eight in the under one; the dog-teeth are long; the tongue is somewhat ciliated; and they have a pouch formed by a duplicature of the skin of the belly, in which the teats are concealed, and their young secured.]

But that which distinguishes this animal from all others, and what has excited the wonder of mankind for more than two centuries, is the extraordinary conformation of its belly, as it is found to have a false womb, into which the young, when brought forth in the usual manner, creep, and continue for some days longer to lodge and suckle securely. This bag, if we may so call it, being one of the most extraordinary things in natural history, requires a more minute description. Under the belly of the female is a kind of slit or opening, of about three inches long: this opening is composed of a skin, which makes a bag internally, covered on the inside with hair. In this bag are the teats of the female; and into it the young, when brought forth, retire, either to suckle or to escape from danger. This bag has a power of opening and shutting at the will of the animal; and this is performed by means of several muscles, and two bones, that are fitted for this purpose, and that are peculiar to this animal only. These two bones are placed before the os pubis, to which they are joined at the base; they are about two inches long, and grow smaller and smaller to their extremities. These support the muscles that serve to open the bag, and give them a fixture. To these muscles there are antagonists, that serve, in the same manner, to shut the bag; and this they perform so exactly, that in the living animal the opening can scarcely be discerned, except when the sides are forcibly drawn asunder. The inside of this bag is furnished with glands, that exude a musky substance, which communicates to the flesh of the animal, and renders it unfit to be eaten. It is not to be supposed that this is the place where the young are conceived, as some have been led to imagine; for the opossum has another womb, like that of the generality of animals, in which generation is performed in

the ordinary manner. The bag we have been describing may rather be considered as a supplemental womb. In the real womb, the little animal is partly brought to perfection; in the ordinary one, it receives a kind of additional incubation, and acquires, at last, strength enough to follow the dam wherever she goes. We have many reasons to suppose that the young of this animal are all brought forth prematurely, or before they have acquired that degree of perfection which is common in other quadrupeds. —The little ones, when first produced, are in a manner but half completed, and some travellers assert, that they are, at that time, not much larger than flies. We are assured also, that immediately on quitting the real womb, they creep into the false one; where they continue fixed to the teat, until they have strength sufficient to venture once more into the open air, and share the fatigues of the parent. Ulloa assures us, that he has found five of these little creatures hidden in the belly of the dam three days after she was dead, still alive, and all clinging to the teat with great avidity. It is probable, therefore, that upon their first entering the false womb they seldom stir out from thence; but when more advanced, they venture forth several times in the day, and at last seldom make use of their retreat, except in cases of necessity or danger. Travellers are not agreed in their accounts of the time which these animals take to continue in the false womb; some assure us they remain there for several weeks, and others, more precisely, mention a month. During this period of strange gestation, there is no difficulty in opening the bag in which they are concealed; they may be reckoned, examined, and handled, without much inconvenience; for they keep fixed to the teat, and cling there as firm as if they made a part of the body of the animal that bears them. When

they are grown stronger, they drop from the teat into the bag in which they are contained, and at last find their way out, in search of more copious subsistence. Still, however, the false belly serves them for a retreat, either when they want to sleep or to suckle, or when they are pursued by an enemy. The dam, on such occasions opens her bag to receive them, which they enter,

——Pars formidine turpi
Scandunt rursus equum et nota condunter in alvo.

The opossum, when on the ground, is a slow helpless animal; the formation of its hands is alone sufficient to show its incapacity of running with any degree of swiftness; but to counterbalance this inconvenience, it climbs trees with great ease and expedition.* It chiefly subsists upon birds, and hides among the leaves of the trees to seize them by surprise. It often also hangs by the tail, which is long and muscular; and, in this situation, for hours together, with the head downwards, it keeps watching for its prey. If any lesser animal, which it is able to overcome, passes underneath, it drops upon it with deadly aim, and quickly devours it. By means of its tail, the opossum also slings from one tree to another, hunts insects, escapes its pursuers, and provides for its safety. It seems to be a creature that lives upon vegetable as well as animal substances, roots, sugar-canes, the bark, and even the leaves of trees. It is easily tamed, but it is a disagreeable domestic as well from its stupidity and figure, as its scent, which, however fragrant in small quantities, fails not to be ungrateful when copiously supplied.

An animal greatly resembling the former† is the Marmose, which is found in the same continent. It seems only to differ in size, being less; and, instead

* Buffon, vol. xxi, p. 174. † Ibid. vol. xxi, p. 212.

1. Unau — 2. Jerboa — 3. Hamster 4. Ai or Sloth — 5. Tarsier?

of a bag to receive its young, has only two longitudinal folds near the thighs, within which the young, which are prematurely brought forth, as in the last instance, continue to suckle. The young of these, when first produced, are not above the size of a bean; but continue sticking to the teat until they have arrived at greater maturity.

The Cayopolin is somewhat larger than the former, and a good deal resembling it in habits and figure, except that its snout is more pointed, its tail is longer in proportion, and its colour is different, being of an ash, somewhat inclining to yellow; however, I should suppose it to be only a variety of the former.

To this number we may add the Phalanger, so called by M. Buffon; a good deal resembling the former, but distinguished by the fashion of its hinder hands; the thumb and fore-finger being joined together, except at the extremities. This animal is about the size of a rat; and has, accordingly, by some, been called the rat of Surinam.

The last animal of this class is called, by M. Buffon, the Tarsier. This extraordinary little animal resembles the former, in having four hands, and a long tail, but it differs very much in the extreme length of its hinder legs which are longer than the rest of its whole body. The bones of that part of the foot called the *tarsus* are likewise so very long, that from thence the animal has received its name: the tail is naked in the middle, and hairy only at both extremities; its hair is woolly, soft, and of a deep ash colour. As to the rest, it is unknown from what country this animal was brought; but the naturalist from whom we have this description, supposes it to be a native of America.

From this general description of four-handed animals, we perceive what few advantages the brute

creation derive from those organs that, in man, are employed to so many great and useful purposes. The being able to pluck their food from the trees, the capacity of clinging among the branches, and at most of converting one of those branches into a weapon of defence, are the highest stretches of their sagacity, and the only use their hands have hitherto been employed in: and yet some superficial men have asserted, that the hands alone are sufficient to vindicate the dominion of mankind over other animals; and that much of his boasted reason, is nothing more than the result of his happier conformation: however, were this so, an ape or a monkey would in some instances be more rational than we; their fingers are smaller, and, in some of them, more finely formed than ours. To what a variety of purposes might they not be employed, if their powers were properly exerted! Those works which we, from the largeness of our fingers, are obliged to go clumsily about, one of these could very easily perform with the utmost exactness; and if the fineness of the hand assisted reason, an ape would be one of the most reasonable beings in the creation. But these admirably formed machines are almost useless both to mankind and themselves; and contribute little more to the happiness of animal life, than the paws of the lowest quadruped. They are supplied, indeed, with the organs, but they want the mind to put them into action: it is that reasoning principle alone, with which man has been endowed, that can adapt seemingly opposite causes to concur in the same general design; and even where the organs are deficient, that can supply their place by the intervention of assisting instruments. Where reason prevails, we find that it scarcely matters what the organs are that give it the direction; the being furnished with that principle, still goes forward, steadily and uniformly suc-

1. *Elephant* _ 2. *Rhinoceros* _ 3. *Camel.*

cessful; breaks through every obstacle, and becomes master of every enterprise. I have seen a man, without hands or legs, convert, by practice, his very stumps to the most convenient purposes; and with these clumsy instruments perform the most astonishing feats of dexterity. We may therefore conclude, that it is the mind alone that gives a master to the creation; and that, if a bear or a horse were endowed with the same intellects that have been given to man, the hardness of a hoof, or the awkwardness of a paw, would be no obstacle to their advancement in the arts of dominion or of social felicity.

CHAPTER VII.

OF THE ELEPHANT.

HAVING gone through the description of those quadrupeds that, by resembling each other in some striking particular, admit of being grouped together, and considered under one point of view, we now come to those insulated sorts, that bear no similitude with the rest, and that, to be distinctly described, must be separately considered.

The foremost of these, and in every respect the noblest quadruped in nature, is the Elephant, not less remarkable for its size than its docility and understanding.* All historians concur in giving it the character of the most sagacious animal next to man; and yet, were we to take our idea of its capacity from its outward appearance, we should be led to

[* This animal has no fore-teeth in either jaw: very long tusks in the upper jaw: the proboscis, or trunk, is long, and capable of laying hold of any substance, however minute; and the body is nearly naked.]

conceive very meanly of its abilities. The elephant, at first view, presents the spectator with an enormous mass of flesh, that seems scarcely animated. Its huge body, covered with a callous hide, without hair; its large misshapen legs, that seem scarcely formed for motion; its little eyes, large ears, and long trunk, all give it an air of extreme stupidity. But our prejudices will soon subside when we come to examine its history; they will even serve to increase our surprise, when we consider the various advantages it derives from so clumsy a conformation.

The elephant is seen from seven to no less than fifteen feet high. Whatever care we take to imagine a large animal beforehand, yet the first sight of this huge creature never fails to strike us with astonishment, and in some measure to exceed our idea. Having been used to smaller animals, we have scarcely any conception of its magnitude; for a moving column of flesh, fourteen feet high, is an object so utterly different from those we are constantly presented with, that to be conceived it must be actually seen. Such, I own, were the suggestions that naturally arose to me when I first saw this animal, and yet for the sight of which I had taken care to prepare my imagination. I found my ideas fall as short of its real size as they did of its real figure; neither the pictures I had seen, nor the descriptions I had read, giving me adequate conceptions of either.

It would, therefore, be impossible to give an idea of this animal's figure by a description, which, even assisted by the art of the engraver, will but confusedly represent the original. In general it may be observed, that the forehead is very high and rising, the ears very large and dependent, the eyes extremely small, the proboscis, or trunk, long, the body round and full, the back rising in an arch, and the whole animal short in proportion to its height. The feet

are round at the bottom; on each foot there are five flat horny risings, which seem to be the extremities of the toes, but do not appear outwardly. The hide is without hair, full of scratches and scars, which it receives in its passage through thick woods and thorny places. At the end of the tail there is a tuft of hair, a foot and a half long. The female is less than the male, and the udder is between the fore-legs. But a more accurate, as well as a more entertaining description of the parts, will naturally occur in the history of their uses.

Of all quadrupeds the elephant is the strongest, as well as the largest; and yet, in a state of nature, it is neither fierce nor formidable.* Mild, peaceful, and brave, it never abuses its power or its strength, and only uses its force for its own protection, or that of its community. In its native deserts the elephant is seldom seen alone, but appears to be a social friendly creature. The oldest of the company conducts the band; that which is next in seniority brings up the rear. The young, the weak, and the sickly, fall into the centre; while the females carry their young, and keep them from falling by means of their trunks. They maintain this order only in dangerous marches, or when they desire to feed in cultivated grounds; they move with less precaution in the forests and solitudes; but without ever separating, or removing so far asunder as to be incapable of lending each other any requisite assistance. Nothing can be more formidable than a drove of elephants as they appear at a distance in an African landscape: wherever they march, the forests seem to fall before them; in their passage, they bear down the branches upon which they feed; and if they enter into an enclosure, they destroy all the labours of the hus-

* I have extracted the greatest part of this description from M. Buffon. - Where I add, I mark with commas, "thus."

bandman in a very short time. Their invasions are the more disagreeable, as there is no means of repelling them, since it would require a small army to attack the whole drove when united. It now and then happens that one or two is found lingering behind the rest, and it is against these that the art and force of the hunters are united; but an attempt to molest the whole body would certainly be fatal. They go forward directly against him who offers the insult, strike him with their tusks, seize him with their trunks, fling him into the air, and then trample him to pieces under their feet. But they are thus dreadful only when offended, and do no manner of personal injury when suffered to feed without interruption. It is even said that they are mindful of injuries received, and when once molested by man, seek all occasions for the future to be revenged; they smell him with their long trunks at a distance; follow him with all their speed upon the scent; and, though slow to appearance they are soon able to come up with and destroy him.

In their natural state they delight to live along the sides of rivers, to keep in the deepest vales, to refresh themselves in the most shady forests and watery places. They cannot live far from the water, and they always disturb it before they drink. They often fill their trunk with it, either to cool that organ, or to divert themselves by spurting it out like a fountain. They are equally distressed by the extremes of heat and cold; and, to avoid the former, they frequently take shelter in the most obscure recesses of the forest, or often plunge into the water, and even swim from the continent into islands some leagues distant from the shore.

Their chief food is of the vegetable kind, for they loathe all kind of animal diet. When one among their number happens to light upon a spot of good

pasture, he calls the rest, and invites them to share in the entertainment; but it must be a very copious pasture indeed that can supply the necessities of the whole band. As with their broad and heavy feet they sink deep wherever they go, they destroy much more than they devour; so that they are frequently obliged to change their quarters, and to migrate from one country to another. The Indians and Negroes, who are often incommoded by such visitants, do all they can to keep them away, making loud noises, and large fires round their cultivated grounds; but these precautions do not always succeed; the elephants often break through their fences, destroy their whole harvest, and overturn their little habitations When they have satisfied themselves, and trod down or devoured whatever lay in their way, they then retreat into the woods in the same orderly manner in which they made their irruption.

Such are the habits of this animal, considered in a social light; and, if we regard it as an individual, we shall find its powers still more extraordinary. With a very awkward appearance, it possesses all the senses in great perfection, and is capable of applying them to more useful purposes than any other quadruped. The elephant, as we observed, has very small eyes when compared to the enormous bulk of its body. But though their minuteness may at first sight appear deformed, yet, when we come to examine them, they are seen to exhibit a variety of expression, and to discover the various sensations with which it is moved. It turns them with attention and friendship to its master; it seems to reflect and deliberate; and as its passions slowly succeed each other, their various workings are distinctly seen.

The elephant is not less remarkable for the excellence of its hearing. Its ears are extremely large, and greater in proportion than even those of an ass.

They are usually dependent; but it can readily raise and move them. They serve also to wipe its eyes, and to protect them against the dust and flies that might otherwise incommode them. It appears delighted with music, and very readily learns to beat time, to move in measure, and even to join its voice to the sound of the drum and the trumpet.

This animal's sense of smelling is not only exquisite, but it is in a great measure pleased with the same odours that delight mankind. The elephant gathers flowers with great pleasure and attention; it picks them up one by one, unites them into a nosegay, and seems charmed with the perfume. The orange-flower seems to be particularly grateful both to its sense of taste and smelling; it strips the tree of all its verdure, and eats every part of it, even to the branches themselves. It seeks in the meadows the most odoriferous plants to feed upon, and in the woods it prefers the cocoa, the banana, the palm, and the sago tree, to all others. As the shoots of these are tender, and filled with pith, it eats not only the leaves and the fruits, but even the branches, the trunk, and the whole plant to the very roots.

But it is in the sense of touching that this animal excels all others of the brute creation, and perhaps even man himself. The organ of this sense lies wholly in the trunk, which is an instrument peculiar to this animal, and that serves it for all the purposes of a hand. The trunk is, properly speaking, only the snout lengthened out to a great extent, hollow like a pipe, and ending in two openings, or nostrils, like those of a hog. An elephant of fourteen feet high has the trunk about eight feet long, and five feet and a half in circumference at the mouth, where it is thickest. It is hollow all along, but with a partition running from one end of it to the other; so that though outwardly it appears like a single pipe, it is inwardly

divided into two. This fleshy tube is composed of nerves and muscles, covered with a proper skin of a blackish colour, like that of the rest of the body. It is capable of being moved in every direction, of being lengthened and shortened, of being bent or straightened, so pliant as to embrace any body it is applied to, and yet so strong that nothing can be torn from the gripe. To aid the force of this grasp, there are several little eminences, like a caterpillar's feet, on the under side of this instrument, which without doubt contribute to the sensibility of the touch, as well as to the firmness of the hold. Through this trunk the animal breathes, drinks, and smells, as through a tube; and at the very point of it, just above the nostrils, there is an extension of the skin, about five inches long, in the form of a finger, and which in fact answers all the purposes of one; for, with the rest of the extremity of the trunk, it is capable of assuming different forms at will, and, consequently, of being adapted to the minutest objects. By means of this, the elephant can take a pin from the ground, untie the knots of a rope, unlock a door, and even write with a pen. "I have myself seen," says Ælian, "an elephant writing Latin characters on a board, in a very orderly manner, his keeper only showing him the figure of each letter. While thus employed, the eyes might be observed studiously cast down upon the writing, and exhibiting an appearance of great skill and erudition." It sometimes happens that the object is too large for the trunk to grasp; in such a case the elephant makes use of another expedient as admirable as any of the former. It applies the extremity of the trunk to the surface of the object, and, sucking up its breath, lifts and sustains such a weight as the air in that case is capable of keeping suspended. In this manner this instrument is useful in most of the purposes of life; it is an or-

gan of smelling, of touching, and of suction; it not only provides for the animal's necessities and comforts, but it also serves for its ornament and defence.

But, though the elephant be thus admirably supplied by its trunk, yet, with respect to the rest of its conformation, it is unwieldy and helpless. The neck is so short, that it can scarcely turn the head, and must wheel round in order to discover an enemy from behind. The hunters that attack it upon that quarter, generally thus escape the effects of its indignation; and find time to renew their assaults, while the elephant is turning to face them. The legs are, indeed, not so inflexible as the neck, yet they are very stiff, and bend not without difficulty. Those before seem to be longer than the hinder; but, upon being measured, are found to be something shorter. The joints by which they bend are nearly in the middle, like the knee of a man; and the great bulk which they are to support makes their flexure ungainly. While the elephant is young, it bends the legs to lie down or to rise; but when it grows old, or sickly, this is not performed without human assistance; and it becomes, consequently, so inconvenient, that the animal chooses to sleep standing. The feet upon which these massy columns are supported, form a base scarcely broader than the legs they sustain. They are divided into five toes, which are covered beneath the skin, and none of which appear to the eye; a kind of protuberance like claws are only observed, which vary in number from three to five. The apparent claws vary; the internal toes are constantly the same. The sole of the foot is furnished with a skin as thick and hard as horn, and which completely covers the whole under part of the foot.

To the rest of the elephant's encumbrances, may be added its enormous tusks, which are unserviceable for chewing, and are only weapons of defence.

These, as the animal grows old, become so heavy, that it is sometimes obliged to make holes in the walls of its stall to rest them in, and ease itself of the fatigue of their support. It is well known to what an amazing size these tusks grow; they are two in number, proceeding from the upper jaw, and are sometimes found above six feet long. Some have supposed them to be rather the horns than the teeth of this animal; but, besides their greater similitude to bone than to horn, they have been indisputably found to grow from the upper jaw, and not from the frontal bones, as some have thought proper to assert.* Some also have asserted, that these tusks are shed in the same manner as the stag sheds his horns; but it is very probable, from their solid consistence, and from their accidental defects, which often appears to be the effect of a slow decay, that they are as fixed as the teeth of other animals are generally found to be. Certain it is, that the elephant never sheds them in a domestic state, but keeps them till they become inconvenient and cumbersome to the last degree. An account of the uses to which these teeth are applied, and the manner of choosing the best ivory, belongs rather to a history of the arts than of nature.

This animal is equally singular in other parts of its conformation: the lips and the tongue in other creatures serve to suck up and direct their drink or their food; but in the elephant they are totally inconvenient for such purposes; and it not only gathers its food with its trunk, but supplies itself with water by the same means. When it eats hay, as I have seen it frequently, it takes up a small wisp of it with the trunk, turns and shapes it with that instrument for some time, and then directs it into the mouth,

* See M. Daubenton's description of the skeleton of this animal.

where it is chewed by the great grinding teeth, that are large in proportion to the bulk of the animal. This packet, when chewed, is swallowed, and never ruminated again, as in cows or sheep, the stomach and intestines of this creature more resembling those of a horse. Its manner of drinking is equally extraordinary. For this purpose, the elephant dips the end of its trunk into the water, and sucks up just as much as fills that great fleshy tube completely. It then lifts up its head with the trunk full, and turning the point into its mouth, as if it intended to swallow trunk and all, it drives the point below the opening of the windpipe. The trunk being in this position, and still full of water, the elephant then blows strongly into it at the other end, which forces the water it contains into the throat; down which it is heard to pour with a loud gurgling noise, which continues till the whole is blown down. From this manner of drinking, some have been led into an opinion that the young elephant sucks with its trunk, and not with its mouth: this, however, is a fact which no traveller has hitherto had an opportunity of seeing, and it must be referred to some future accident to determine.

The hide of the elephant is as remarkable as any other part. It is not covered over with hair, as in the generality of quadrupeds, but is nearly bare. Here and there, indeed, a few bristles are seen growing in the scars and wrinkles of the body, and very thinly scattered over the rest of the skin; but in general the hide is dry, rough, and wrinkled, and resembling more the bark of an old tree than the skin of an animal. This grows thicker every year; and, by a constant addition of substance, it at length contracts that disorder well known by the name of the *elephantiasis*, or Arabian leprosy; a disease to which man, as well as the elephant, is often subject. In

order to prevent this, the Indians rub the elephant with oil, and frequently bathe it to preserve its pliancy. To the inconveniences of this disorder is added another, arising from the great sensibility of those parts that are not callous. Upon these the flies settle in great abundance, and torment this animal unceasingly; to remedy which the elephant tries all its arts, using not only its tail and trunk in the natural manner to keep them off, but even takes the branch of a tree, or a bundle of hay, to strike them off with. When this fails, it often gathers up the dust with its trunk, and thus covers all the sensible places. In this manner, it has been seen to dust itself several times a day, and particularly upon leaving the bath.

Water is as necessary to this animal as food itself. When in a state of nature, the elephant rarely quits the banks of the river, and often stands in water up to the belly. In a state of servitude, the Indians take equal care to provide a proper supply; they wash it with great address; they give it all the conveniences for lending assistance to itself; they smooth the skin with a pumice-stone, and then rub it over with oils, essences, and odours.

It is not to be wondered at that an animal furnished with so many various advantages, both of strength, sagacity, and obedience, should be taken into the service of man. We accordingly find that the elephant, from time immemorial, has been employed either for the purposes of labour, of war, or of ostentation; to increase the grandeur of eastern princes, or to extend their dominions. We have hitherto been describing this animal in its natural state; we now come to consider it in a different view, as taken from the forest and reduced to human obedience. We are now to behold this brave harmless creature as learning a lesson from mankind, and instructed by him

in all the arts of war, massacre, and devastation. We are now to behold this half-reasoning animal led into the field of battle, and wondering at those tumults and that madness which he is compelled to increase. The elephant is a native of Africa and Asia, being found neither in Europe nor America. In Africa he still retains his natural liberty. The savage inhabitants of that part of the world, instead of attempting to subdue this powerful creature to their necessities, are happy in being able to protect themselves from his fury. Formerly, indeed, during the splendour of the Carthaginian empire, elephants were used in their wars; but this was only a transitory gleam of human power in that part of the globe; the natives of Africa have long since degenerated, and the elephant is only known among them from his devastations. However, there are no elephants in the northern parts of Africa at present, there being none found on this side of Mount Atlas. It is beyond the river Senegal that they are to be met with in great numbers, and so down to the Cape of Good Hope, as well as in the heart of the country. In this extensive region they appear to be more numerous than in any other part of the world. They are there less fearful of man: less retired into the heart of the forests, they seem to be sensible of his impotence and ignorance; and often come down to ravage his little labours. They treat him with the same haughty disdain which they show to other animals, and consider him as a mischievous little being, that fears to oppose them openly.

But, although these animals are most plentiful in Africa, it is only in Asia that the greatest elephants are found, and rendered subservient to human command. In Africa, the largest do not exceed ten feet high; in Asia they are found from ten to fifteen. Their price increases in proportion to their size; and

when they exceed a certain bulk, like jewels, their value then rises as the fancy is pleased to estimate.

The largest are entirely kept for the service of princes, and are maintained with the utmost magnificence, and at the greatest expense. The usual colour of the elephant is a dusky black, but some are said to be white, and the price of one of these is inestimable. Such a one is peculiarly appropriated for the monarch's own riding; he is kept in a palace, attended by the nobles, and almost adored by the people.* Some have said that these white elephants are larger than the rest;† others assert that they are less; and still others entirely doubt their existence.

As the art of war is but very little improved in Asia, there are few princes of the East who do not procure and maintain as many elephants as they are able, and place great confidence on their assistance in an engagement. For this purpose, they are obliged to take them wild in their native forests, and tame them; for the elephant never breeds in a state of servitude. It is one of the most striking peculiarities in this extraordinary creature, that his generative powers totally fail when he comes under the dominion of man, as if he seemed unwilling to propagate a race of slaves, to increase the pride of his conqueror. There is, perhaps, no other quadruped that will not breed in its own native climates, if indulged with a moderate share of freedom, and we know that many of them will copulate in every climate. The elephant alone has never been seen to breed, and though he has been reduced under the obedience of man for ages, the duration of pregnancy in the female‡ still remains a secret. Aristotle, indeed, as-

* P. Vincent Marie. † P. Tachard.

‡ Multis persuasum est elephantem non brutorum sed hominum more coire. Quod retro mingit non dubitatur. Sed ipse vidi marem hujusce speciei, in nostri regis stabulis, super fœmellam itidem, inclusam quadrupedum more silientem, pene paululum incurvato sed sufficienter recto.

serts, that she goes two years with young; that she continues to suckle her young for three years, and that she brings forth but one at a time; but he does not inform us of the manner in which it was possible for him to have his information. From authorities equally doubtful we learn, that the little one is about as large as a wild boar the instant it is brought forth; that its tusks do not yet appear, but that all the rest of its teeth are apparent; that at the age of six months it is as large as an ox, and its tusks pretty well grown; and that it continues in this manner for near thirty years, advancing to maturity. All this is doubtful; but it is certain that, in order to recruit the numbers which are consumed in war, the princes of the East are every year obliged to send into the forests, and to use various methods to procure a fresh supply. Of all these numerous bands, there is not one that has not been originally wild, nor one that has not been forced into a state of subjection. Men themselves are often content to propagate a race of slaves that pass down in this wretched state through successive generations; but the elephant under subjection is unalterably barren, perhaps from some physical causes which are as yet unknown.

The Indian princes having vainly endeavoured to multiply the breed of elephants, like that of other animals, have been, at last, content to separate the males from the females, to prevent those accesses of desire, which debilitated without multiplying the species. In order to take them wild in the woods, a spot of ground is fixed upon, which is surrounded with a strong palisade. This is made of the thickest and the strongest trees; and strengthened by cross bars, which give firmness to the whole. The posts are fixed at such distances from each other, that a man can easily pass between them; there being only one great passage left open, through which an ele-

phant can easily come, and which is so contrived as to shut behind, as soon as the beast is entered. To draw him into this enclosure, it is necessary first to find him out in the woods; and a female elephant is conducted along into the heart of the forest, where it is obliged by its keeper to cry out for the male. The male very readily answers the cry, and hastens to join her; which the keeper perceiving, obliges her to retreat, still repeating the same cry, until she leads the animal into the enclosure already described, which shuts the moment he is entered. Still, however, the female proceeds calling, and inviting, while the male proceeds forward in the enclosure, which grows narrower all the way, and until the poor animal finds himself completely shut up, without the power of either advancing or retreating; the female, in the mean time, being let out by a private way, which she has been previously accustomed to. The wild elephant, upon seeing himself entrapped in this manner, instantly attempts to use violence; and, upon seeing the hunters, all his former desires only turn to fury. In the mean time the hunters, having fixed him with cords, attempt to soften his indignation, by throwing buckets of water upon him in great quantities, rubbing the body with leaves, and pouring oil down his ears. Soon after, two tame elephants are brought, a male and a female, that caress the indignant animal with their trunks; while they still continue pouring water to refresh it. At last a tame elephant is brought forward, of that number which is employed in instructing the newcomers, and an officer riding upon it, in order to show the late captive that it has nothing to fear. The hunters then open the enclosure; and, while this creature leads the captive along, two more are joined on either side of it, and these compel it to submit. It is then tied by cords to a massy pillar

provided for that purpose, and suffered to remain in that position for about a day and a night, until its indignation be wholly subsided. The next day it begins to be somewhat submissive, and in a fortnight is completely tamed like the rest. The females are taken when accompanying the males; they often come into these enclosures, and they shortly after serve as decoys to the rest. But this method of taking the elephant differs, according to the abilities of the hunter: the Negroes of Africa, who hunt this animal merely for its flesh, are content to take it in pit-falls; and often to pursue it in the defiles of a mountain, where it cannot easily turn, and so wound it from behind till it falls.

The elephant, when once tamed, becomes the most gentle and obedient of all animals. It soon conceives an attachment for the person that attends it, caresses him, obeys him, and seems to anticipate his desires. In a short time it begins to comprehend several of the signs made to it, and even the different sounds of the voice; it perfectly distinguishes the tone of command from that of anger or approbation, and it acts accordingly. It is seldom deceived in its master's voice; it receives his orders with attention, and executes them with prudence, eagerly, yet without precipitation. All its motions are regulated; and its actions seem to partake of its magnitude, being grave, majestic, and secure. It is quickly taught to kneel down to receive its rider; it caresses those it knows with its trunk; with this salutes such as it is ordered to distinguish, and with this, as with a hand, helps to take up a part of its load. It suffers itself to be arrayed in harness, and seems to take a pleasure in the finery of its trappings. It draws either chariots, cannon, or shipping, with surprising strength and perseverance; and this with a seeming satisfaction, provided that it be not beaten without a cause, and that its master appears pleased with its exertions.

The elephant's conductor is usually mounted upon its neck, and makes use of a rod of iron to guide it, which is sometimes pointed, and at others bent into a hook. With this the animal is spurred forward, when dull or disobedient; but, in general, a word is sufficient to put the gentle creature into motion, especially when it is acquainted with its conductor. This acquaintance is often perfectly necessary; for the elephant frequently takes such an affection to its keeper, that it will obey no other; and it has been known to die for grief, when in some sudden fit of madness it has killed its conductor. We are told that one of these, that was used by the French forces in India for the drawing their cannon, was promised by the conductor a reward for having performed some painful service; but being disappointed of its expectations, it slew him in a fury. The conductor's wife, who was a spectator of this shocking scene, could not restrain her madness and despair; but running with her two children in her arms, threw them at the elephant's feet, crying out, that since it had killed her husband, it might kill her and her children also. The elephant seeing the children at his feet, instantly stopped, and moderating its fury, took up the eldest with its trunk, and placing him upon its neck, adopted him for its conductor, and obeyed him ever after with great punctuality.

But it is not for drawing burdens alone that the elephants are serviceable in war; they are often brought into the ranks, and compelled to fight in the most dangerous parts of the field of battle. There was a time, indeed, in India, when they were much more used in war than at present. A century or two ago, a great part of the dependence of the general was upon the number and the expertness of his elephants; but of late, since war has been contented to adopt fatal, instead of formidable arts, the elephant

is little used, except for drawing cannon, or transporting provisions. The princes of the country are pleased to keep a few for ornament, or for the purposes of removing their seraglios; but they are seldom led into a field of battle, where they are unable to withstand the discharge of fire-arms, and have often been found to turn upon their employers. Still, however, they are used in war, in the more remote parts of the East; in Siam, in Cochin-China, in Tonquin, and Pegu. In all these places, they not only serve to swell the pomp of state, being adorned with all the barbarian splendour that those countries can bestow, but they are actually led into the field of battle, armed before with coats of mail, and loaded on the back each with a square tower, containing from five combatants to seven. Upon its neck sits the conductor, who goads the animal into the thickest ranks, and encourages it to increase the devastation: wherever it goes, nothing can withstand its fury; it levels the ranks with its immense bulk, flings such as oppose it into the air, or crushes them to death under its feet. In the mean time, those who are placed upon its back combat as from an eminence, and fling down their weapons with double force, their weight being added to their velocity. Nothing, therefore, can be more dreadful, or more irresistible, than such a moving machine, to men unacquainted with the modern arts of war: the elephant, thus armed and conducted, raging in the midst of a field of battle, inspires more terror than even those machines that destroy at a distance, and are often most fatal when most unseen. But this method of combating is rather formidable than effectual: polished nations have ever been victorious over those semi-barbarous troops, that have called in the elephant to their assistance, or attempted to gain a victory by merely astonishing their opposers. The Romans

quickly learned the art of opening their ranks to admit the elephant; and thus separating it from assistance, quickly compelled its conductors to calm the animal's fury, and to submit. It sometimes also happened that the elephant became impatient of control; and, instead of obeying its conductor, turned upon those forces it was employed to assist. In either case, there was a great deal of preparation to very little effect: for a single elephant is known to consume as much as forty men in a day.

At present, therefore, they are chiefly employed in carrying or drawing burdens throughout the whole peninsula of India; and no animal can be more fitted by nature for this employment. The strength of an elephant is equal to its bulk, for it can with great ease draw a load that six horses could not remove; it can readily carry upon its back three or four thousand weight; upon its tusks alone it can support near a thousand. Its force may also be estimated from the velocity of its motion, compared to the mass of its body. It can go, in its ordinary pace, as fast as a horse at an easy trot; and when pushed, it can move as swiftly as a horse at full gallop. It can travel with ease fifty or sixty miles a day, and when hard pressed, almost double that distance. It may be heard trotting on at a great distance: it is easy also to follow it by the track, which is deeply impressed on the ground, and from fifteen to eighteen inches in diameter.

In India they are also put to other very disagreeable offices; for in some courts of the more barbarous princes, they are used as executioners; and this horrid task they perform with great dexterity: with their trunks they are seen to break every limb of the criminal at the word of command; they sometimes trample him to death, and sometimes impale him on their enormous tusks, as directed. In this

the elephant is rather the servant of a cruel master, than a voluntary tyrant, since no other animal of the forest is so naturally benevolent and gentle: equally mindful of benefits as sensible of neglect, he contracts a friendship for his keeper, and obeys him even beyond his capacity.

In India, where they were at one time employed in launching ships, a particular elephant was directed to force a very large vessel into the water: the work proved superior to its strength, but not to its endeavours; which, however the keeper affected to despise. "Take away," says he, "that lazy beast, and bring another better fitted for service." The poor animal instantly upon this redoubled its efforts, fractured its skull, and died upon the spot.

In Delhi, an elephant passing along the streets put his trunk into a tailor's shop, where several people were at work. One of the persons of the shop, desirous of some amusement, pricked the animal's trunk with his needle, and seemed highly delighted with this slight punishment. The elephant, however, passed on without any immediate signs of resentment; but coming to a puddle filled with dirty water, he filled his trunk, returned to the shop, and spurted the contents over all the finery upon which the tailors were then employed.

An elephant in Adsmeer, which often passed through the bazar or market, as he went by a certain herb-woman always received from her a mouthful of greens. Being one day siezed with a periodical fit of madness, he broke his fetters, and running through the market, put the crowd to flight, and among others this woman, who in her haste forgot a little child at her stall. The elephant, recollecting the spot where his benefactress was accustomed to sit, took up the infant gently in his trunk, and conveyed it to a place of safety.

At the Cape of Good Hope it is customary to hunt those animals for the sake of their teeth. Three horsemen, well mounted, and armed with lances, attack the elephant alternately, each relieving the other, as they see their companion pressed till the beast is subdued. Three Dutchmen, brothers, who had made large fortunes by this business, determined to retire to Europe, and enjoy the fruits of their labours; but they resolved, one day before they went, to have a last chase by way of amusement; they met with their game, and began their attack in the usual manner; but unfortunately, one of their horses falling, happened to fling his rider: the enraged elephant instantly seized the unhappy huntsman with his trunk, flung him up to a vast height in the air, and received him upon one of his tusks as he fell; and then turning towards the other two brothers, as if it were with an aspect of revenge and insult, held out to them the impaled wretch, writhing in the agonies of death.

The teeth of the elephant are what produce the great enmity between him and mankind; but whether they are shed like the horns of the deer, or whether the animal be killed to obtain them, is not yet perfectly known. All we have as yet certain is, that the natives of Africa, from whence almost all our ivory comes, assure us, that they find the greatest part of it in their forests; nor would, say they, the teeth of an elephant recompence them for their trouble and danger in killing it. Notwithstanding, the elephants which are tamed by man are never known to shed their tusks; and, from the hardness of their substance, they seem no way analogous to deers' horns.

The teeth of the elephant are very often found in a fossil state. Some years ago, two great grinding teeth, and part of the tusk of an elephant, were dis-

covered, at the depth of forty-two yards, in a lead-mine in Flintshire.*

The tusks of the Mammoth, so often found fossil in Siberia, and which are converted to the purposes of ivory, are generally supposed to belong to the elephant; however, the animal must have been much larger in that country than it is found at present, as those tusks are often known to weigh four hundred pounds, while those that come from Africa seldom exceed two hundred and fifty. These enormous tusks are found lodged in the sandy banks of the Siberian rivers; and the natives pretend that they belong to an animal which is four times as large as the elephant.

There have lately been discovered several enormous skeletons, five or six feet beneath the surface, on the banks of the Ohio, not remote from the river Miunie, in America, seven hundred miles from the sea-coast. Some of the tusks are near seven feet long; one foot nine inches in circumference at the base, and one foot near the point; the cavity at the root or base, nineteen inches deep. Besides their size, there are yet other differences; the tusks of the true elephant have sometimes a very slight lateral bend, these have a larger twist, or spiral curve, towards the smaller end: but the great and specific difference consists in the shape of the grinding teeth, which in these newly found are fashioned like the teeth of a carnivorous animal; not flat and ribbed transversely on their surface like those of the modern elephant, but furnished with a double row of high and conic processes, as if intended to masticate, not to grind their food. A third difference is in the thigh-bone, which is of a great disproportionable thickness to that of the elephant, and has also some other anatomical variations. These fossil bones have been also found in Peru and

* Pennant's Synopis, p. 90.

the Brazils; and when cut and polished by the workers in ivory, appear in every respect similar. It is the opinion of Dr. Hunter that they must have belonged to a larger animal than the elephant, and differing from it in being carnivorous. But as yet this formidable creature has evaded our search; and if, indeed, such an animal exists, it is happy for man that it keeps at a distance; since what ravage might not be expected from a creature endued with more than the strength of the elephant, and all the rapacity of the tiger!

CHAPTER VIII.

OF THE RHINOCEROS.

Next to the elephant, the Rhinoceros is the most powerful of animals. It is usually found twelve feet long from the tip of the nose to the insertion of the tail; from six to seven feet high; and the circumference of its body is nearly equal to its length. It is, therefore, equal to the elephant in bulk; and if it appears much smaller to the eye, the reason is, that its legs are much shorter. Words can convey but a very confused idea of this animal's shape, and yet there are few so remarkably formed: Its head is furnished with a horn, growing from the snout, sometimes three feet and a half long; and but for this, that part would have the appearance of the head of a hog; the upper lip, however, is much longer in proportion, ends in a point, is very pliable, serves to collect its food, and deliver it into the mouth: the ears are large, erect, and pointed; the eyes are small and piercing; the skin is naked, rough, knotty, and lying upon the body in folds, after a very peculiar

fashion: there are two folds very remarkable, one above the shoulders, and another over the rump, the skin, which is of a dirty brown colour, is so thick as to turn the edge of a scimitar, and to resist a musket-ball; the belly hangs low; the legs are short, strong, and thick; and the hoofs divided into three parts, each pointing forward.

Such is the general outline of an animal that appears chiefly formidable from the horn growing from its snout, and formed rather for war than with a propensity to engage. This horn is sometimes found from three to three feet and a half long, growing from the solid bone, and so disposed as to be managed to the greatest advantage. It is composed of the most solid substance, and pointed so as to inflict the most fatal wounds. The elephant, the boar, or the buffalo, are obliged to strike transversely with their weapons, but the rhinoceros employs all his force with every blow; so that the tiger will more willingly attack any other animal of the forest, than one whose strength is so justly employed. Indeed, there is no force which this terrible animal has to apprehend; defended on every side by a thick horny hide, which the claws of the lion or the tiger are unable to pierce, and armed before with a weapon that even the elephant does not choose to oppose.

The missionaries assure us, that the elephant is often found dead in the forests, pierced with the horn of a rhinoceros; and though it looks like wisdom to doubt whatever they tell us, yet I cannot help giving credit to what they relate on this occasion, particularly when confirmed by Pliny. The combat between these two, the most formidable animals of the forest, must be very dreadful. Emanuel, king of Portugal, willing to try their strength, actually opposed them to each other, and the elephant was defeated.

But though the rhinoceros is thus formidable by nature, yet imagination has not failed to exert itself, in adding to its terrors. The scent is said to be most exquisite; and it is affirmed, that it consorts with the tiger. It is reported also, that when it has overturned a man, or any other animal, it continues to lick the flesh quite from the bone with its tongue, which is said to be extremely rough. All this, however, is fabulous: the scent, if we may judge from the expansion of the olfactory nerves, is not greater than that of a hog, which we know to be indifferent; it keeps company with the tiger, only because they both frequent watery places in the burning climates where they are bred; and as to its rough tongue, that is so far from the truth, that no animal of near its size has so soft a one. "I have often felt it myself," says Ladvocat, in his description of this animal; "it is smooth, soft, and small, like that of a dog; and to the feel it appears as if one passed the hand over velvet. I have often seen it lick a young man's face who kept it, and both seemed pleased with the action."

The rhinoceros which was shown at London in 1739, and described by Dr. Parsons, had been sent from Bengal. Though it was very young, not being above two years old, yet the charge of its carriage and food from India cost near a thousand pounds. It was fed with rice, sugar, and hay: It was daily supplied with seven pounds of rice, mixed with three of sugar, divided into three portions; it was given great quantities of hay and grass, which it chiefly preferred; its drink was water, which it took in great quantities. It was of a gentle disposition, and permitted itself to be touched and handled by all visitors, never attempting mischief, except when abused, or when hungry; in such a case there was no method of appeasing its fury, but by giving it something to

eat. When angry, it would jump up against the walls of its room with great violence, and make many efforts to escape; but seldom attempted to attack its keeper, and was always submissive to his threats. It had a peculiar cry, somewhat a mixture between the grunting of a hog and the bellowing of a calf.

The age of these animals is not well known: it is said by some that they bring forth at three years old, and if we may reason from analogy, it is probable they seldom live till above twenty. That which was shown in London, was said, by its keeper, to be eighteen years old, and even at that age he pretended to consider it as a young one; however, it died shortly after, and that probably in the course of nature.

The rhinoceros is a native of the deserts of Asia and Africa, and is usually found in those extensive forests that are frequented by the elephant and the lion. As it subsists entirely upon vegetable food, it is peaceful and harmless among its fellows of the brute creation; but, though it never provokes to combat, it equally disdains to fly. It is every way fitted for war, but rests content in the consciousness of its security. It is particularly fond of the prickly branches of trees, and is seen to feed upon such thorny shrubs as would be dangerous to other animals, either to gather or to swallow. The prickly points of these, however, may only serve to give a poignant relish to this animal's palate, and may answer the same grateful ends in seasoning its banquet, that spices do in heightening ours.

In some parts of the continent of Asia, where the natives are more desirous of appearing warlike than showing themselves brave, these animals are tamed, and led into the field to strike terror into the enemy; but they are always unmanageable and restive ani-

mals, and probably more dangerous to the employers, than those whom they are brought to oppose.

The method of taking them is chiefly watching them, till they are found either in some moist or marshy place, where, like hogs, they are fond of sleeping and wallowing. They then destroy the old one with fire-arms; for no weapons, that are thrown by the force of man, are capable of entering this animal's hide. If, when the old one is destroyed, there happens to be a cub, they seize and tame it: these animals are sometimes taken in pit-falls, covered with green branches, laid in those paths which the rhinoceros makes in going from the forest to the river side.

There are some varieties in this animal, as in most others: some of them are found in Africa with a double horn, one growing above the other. This weapon, if considered in itself, is one of the strongest, and most dangerous, that nature furnishes to any part of the animal creation. The horn is entirely solid, formed of the hardest bony substance, growing from the upper maxillary bone, by so strong an apophyse as seemingly to make but one part with it. Many are the medicinal virtues that are ascribed to this horn, when taken in powder; but these qualities have been attributed to it without any real foundation, and make only a small part of the many fables which this extraordinary animal has given rise to.

CHAPTER IX.

THE HIPPOPOTAMUS.

The Hippopotamus is an animal as large, and not less formidable, than the rhinoceros: its legs are

shorter, and its head rather more bulky, than that of the animal last described. We have had but few opportunities in Europe of examining this formidable creature minutely; its dimensions, however, have been pretty well ascertained by a description given us by Zerenghi, an Italian surgeon, who procured one of them to be killed on the banks of the river Nile. By his account it appears, that this terrible animal, which chiefly resides in the waters of that river, is above seventeen feet long, from the extremity of the snout to the insertion of the tail; above sixteen feet in circumference round the body, and above seven feet high: the head is near four feet long, and above nine feet in circumference. The jaws open about two feet wide, and the cutting teeth, of which it hath four in each jaw, are above a foot long.*

Its feet in some measure resemble those of the elephant, and are divided into four parts. The tail is short, flat, and pointed; the hide is amazingly thick, and though not capable of turning a musket-ball, is impenetrable to the blow of a sabre; the body is covered over with a few scattered hairs, of a whitish colour. The whole figure of the animal is something between that of an ox and a hog, and its cry is something between the bellowing of the one and the grunting of the other.

This animal, however, though so terribly furnished for war, seems no way disposed to make use of its prodigious strength against an equal enemy: it chiefly resides at the bottom of the great rivers and lakes of Africa, the Nile, the Niger, and the Zara;

[* The hippopotamus has four fore-teeth in the upper jaw, disposed in pairs at a distance from each other, and four prominent fore-teeth in the under jaw, the intermediate ones being longest. There are two tusks in each jaw, those of the under one being very long, and obliquely truncated; in both they stand solitary, and are recurvated: the feet are hoofed on the edges.]

there it leads an indolent kind of life, and seems seldom disposed for action, except when excited by the calls of hunger. Upon such occasions, three or four of them are often seen at the bottom of a river, near some cataract, forming a kind of line, and seizing upon such fish as are forced down by the violence of the stream. In that element they pursue their prey with great swiftness and perseverance; they swim with much force, and remain at the bottom for thirty or forty minutes without rising to take breath. They traverse the bottom of the stream, as if walking upon land, and make a terrible devastation where they find plenty of prey. But it often happens that this animal's fishy food is not supplied in sufficient abundance; it is then forced to come upon land, where it is an awkward and unwieldy stranger: it moves but slowly, and, as it seldom forsakes the margin of the river, it sinks at every step it takes; sometimes, however, it is forced by famine up into the higher grounds, where it commits dreadful havoc among the plantations of the helpless natives, who see their possessions destroyed without daring to resist their invader. Their chief method is, by lighting fires, striking drums, and raising a cry, to frighten it back to its favourite element; and as it is extremely timorous upon land, they generally succeed in their endeavours. But if they happen to wound, or otherwise irritate it too closely, it then becomes formidable to all that oppose it: it overturns whatever it meets, and exerts all its strength, which it seemed not to have discovered before that dangerous occasion. It possesses the same inoffensive disposition in its favourite element, that it is found to have upon land: it is never found to attack the mariners in their boats as they go up or down the stream; but should they inadvertently strike against it, or otherwise disturb its repose, there is much danger of its sending

them at once to the bottom. "I have seen," says a mariner, as we find it in Dampier, "one of these animals open its jaws, and seizing a boat between his teeth, at once bite and sink it to the bottom. I have seen it, upon another occasion, place itself under one of our boats, and rising under it, overset it with six men who were in it; who, however, happily received no other injury." Such is the great strength of this animal; and from hence, probably, the imagination has been willing to match it in combat against others more fierce, and equally formidable. The crocodile and shark have been said to engage with it, and yield an easy victory; but as the shark is only found at sea, and the hippopotamus never ventures beyond the mouth of fresh water rivers, it is most probable that these engagements never occurred: it sometimes happens, indeed, that the princes of Africa amuse themselves with combats, on their fresh water lakes, between this and other formidable animals; but whether the rhinoceros or the crocodile are of this number, we have not been particularly informed. If this animal be attacked on land, and finding itself incapable of vengeance from the swiftness of its enemy, it immediately returns to the river, where it plunges in head foremost, and after a short time rises to the surface, loudly bellowing, either to invite or intimidate the enemy: but though the Negroes will venture to attack the shark, or the crocodile, in their natural element, and there destroy them, they are too well apprized of the force of the hippopotamus to engage it; this animal, therefore, continues the uncontrolled master of the river, and all others fly from its approach, or become an easy prey.

As the hippopotamus lives upon fish and vegetables, so it is probable the flesh of terrestrial animals may be equally grateful: the natives of Africa assert,

that it has often been found to devour children and other creatures that it was able to surprise upon land; yet as it moves but slowly, almost every creature, endued with a common share of swiftness, is able to escape it; and this animal, therefore, seldom ventures from the river side, but when pressed by the necessities of hunger, or of bringing forth its young.

The female always comes upon land to bring forth, and it is supposed that she seldom produces above one at a time. Upon this occasion these animals are particularly timorous, and dread the approach of a terrestrial enemy; the instant the parent hears the slightest noise, it dashes into the stream, and the young one is seen to follow it with equal alacrity.

The young ones are said to be excellent eating; but the Negroes, to whom nothing that has life comes amiss, find an equal delicacy in the old. Dr. Pocoke has seen their flesh sold in the shambles, like beef; and it is said that their breast, in particular, is as delicate eating as veal. As for the rest, these animals are found in great numbers; and as they produce very fast, their flesh might supply the countries where they are found, could those barbarous regions produce more expert huntsmen. It may be remarked, however, that this creature, which was once in such plenty at the mouth of the Nile, is now wholly unknown in Lower Egypt, and is no where to be found in that river, except above the cataracts.

CHAPTER X.

THE CAMELOPARD.

Were we to be told of an animal so tall, that a man on horseback could with ease ride under its

belly without stooping, we should hardly give credit to the relation; yet of this extraordinary size is the camelopard, an animal that inhabits the deserts of Africa, and the accounts of which are so well ascertained, that we cannot deny our assent to their authority. It is no easy matter to form an adequate idea of this creature's size, and the oddity of its formation. It exhibits somewhat the slender shape of the deer, or the camel, but destitute of their symmetry, or their easy power of motion. The head somewhat resembles that of the deer, with two round horns, near a foot long, and which, it is probable, it sheds as deer are found to do; its neck resembles that of a horse; its legs and feet those of the deer; but with this extraordinary difference, that the fore-legs are nearly twice as long as the hinder.* As these creatures have been found eighteen feet high, and ten from the ground to the top of the shoulder, so, allowing three feet for the depth of the body, seven feet remains, which is high enough to admit a man mounted upon a middle-sized horse. The hinder part, however, is much lower, so that when the animal appears standing, and at rest, it has somewhat the appearance of a dog sitting; and this formation of its legs gives it an awkward and a laborious motion, which, though swift, must yet be tiresome. For this reason, the camelopard is an animal very rarely found, and only finds refuge in the most internal desert regions of Africa. The dimensions of a young one, as they were accurately taken by a person who examined its skin, that was brought from the Cape of Good Hope, were found to be as follow: the

[* It is now known that the fore-legs of the camelopard are not above seven inches longer than its hind-legs; but the shoulders are of a vast length, which gives the disproportionate height between the fore and hind parts. It has eight fore-teeth in the under jaw, but none in the upper; and there are six grinders on each side in both jaws. The feet are cloven, and they have no heel.]

length of the head was one foot eight inches; the height of the fore-leg, from the ground to the top of the shoulder, was ten feet; from the shoulder to the top of the head was seven; the height of the hind-leg was eight feet five inches; and from the top of the shoulder to the insertion of the tail, was just seven feet long.

No animal, either from its disposition or its formation, seems less fitted for a state of natural hostility: its horns are blunt, and even knobbed at the ends; its teeth are made entirely for vegetable pasture; its skin is beautifully speckled with dark spots, upon a whitish ground. It is timorous and harmless, and notwithstanding its great size, rather flies from than resists the slightest enemy: it partakes very much of the nature of the camel, which it so nearly resembles; it lives entirely upon vegetables, and when grazing is obliged to spread its fore-legs very wide, in order to reach its pasture; its motion is a kind of pace, two legs on each side moving at the same time, whereas in other animals they move transversely. It often lies down with its belly to the earth, and, like the camel, has a callous substance upon its breast, which, when reposed, defends it from injury. This animal was known to the ancients, but has been very rarely seen in Europe. One of them was sent from the East to the emperor of Germany, in the year 1559: but they have often been seen tame at Grand Cairo, in Egypt; and I am told there are two there at present. When ancient Rome was in its splendour, Pompey exhibited, at one time, no less than ten upon the theatre. It was the barbarous pleasure of the people at that time, to see the most terrible, and the most extraordinary animals produced in combat against each ether. The lion, the lynx, the tyger, the elephant, the hippopotamus, were all let loose promiscuously, and were seen to inflict indiscriminate destruction.

CHAPTER XI.

THE CAMEL AND THE DROMEDARY.

These names do not make two distinct kinds, but are only given to a variety of the same animal, which has, however, subsisted time immemorial. The principal, and perhaps the only sensible difference by which those two races are distinguished, consists in this, that the camel has two bunches upon his back, whereas the dromedary has but one; the latter, also, is neither so large nor so strong as the camel. These two races, however, produce with each other, and the mixed breed formed between them is considered the best, the most patient, and the most indefatigable of all the kind.*

Of the two varieties, the dromedary is by far the most numerous; the camel being scarcely found except in Turkey and the countries of the Levant, while the other is found spread over all the deserts of Arabia, the southern parts of Africa, Persia, Tartary, and a great part of the Eastern Indies. Thus the one inhabits an immense tract of country, the other, in comparison, is confined to a province; the one inhabits the sultry countries of the torrid zone, the other delights in a warm, but not a burning climate; neither, however, can subsist or propagate in the variable climates towards the north: they seem formed for those countries, where shrubs are plenty, and water scarce; where they can travel along the sandy desert without being impeded by rivers, and find food at expected distances: such a country

[* These animals have no horns. They have six fore-teeth in the under jaw; the canine teeth are wide set, three in the upper, and two in the lower jaw; and there is a fissure in the upper lip, resembling the cleft in the lip of a hare.]

as Arabia, and this, of all others, seems the most adapted to the support and production of this animal.

The camel is the most temperate of all animals, and it can continue to travel several days without drinking. In those vast deserts, where the earth is every where dry and sandy, where there are neither birds nor beasts, neither insects nor vegetables, where nothing is to be seen but hills of sand and heaps of bones, there the camel travels, posting forward, without requiring either drink or pasture, and is often found six or seven days without any sustenance whatsoever. Its feet are formed for travelling upon sand, and utterly unfit for moist or marshy places: the inhabitants, therefore, find a most useful assistant in this animal where no other could subsist, and by its means cross those deserts with safety, which would be impassable by any other method of conveyance.

An animal thus formed for a sandy and desert region, cannot be propagated in one of a different nature. Many vain efforts have been tried to propagate the camel in Spain; they have been transported into America, but have multiplied in neither. It is true, indeed, that they may be brought into these countries, and may, perhaps, be found to produce there; but the care of keeping them is so great, and the accidents to which they are exposed, from the changeableness of the climate, are so many, that they cannot answer the care of keeping. In a few years also they are seen to degenerate, their strength and their patience forsake them; and instead of making the riches, they become the burden of their keepers.

But it is very different in Arabia, and those countries where the camel is turned to useful purposes. It is there considered as a sacred animal, without

whose help the natives could neither subsist, traffic, nor travel; its milk makes a part of their nourishment; they feed upon its flesh, particularly when young; they clothe themselves with its hair, which it is seen to moult regularly once a-year; and if they fear an invading enemy, their camels serve them in flight, and in a single day they are known to travel above a hundred miles. Thus, by means of the camel, an Arabian finds safety in his deserts: all the armies upon earth might be lost in the pursuit of a flying squadron of this country, mounted upon their camels, and taking refuge in solitudes where nothing interposes to stop their flight or to force them to wait the invader. Nothing can be more dreary than the aspect of these sandy plains, that seem entirely forsaken of life and vegetation: wherever the eye turns, nothing is presented but a sterile and dusty soil, sometimes torn up by the winds, and moving in great waves along, which, when viewed from an eminence, resemble less the earth than the ocean. Here and there a few shrubs appear, that only teach us to wish for the grove, that remind us of the shade in these sultry climates, without affording its refreshment: the return of morning, which in other places carries an idea of cheerfulness, here serves only to enlighten the endless and dreary waste, and to present the traveller with an unfinished prospect of his forlorn situation; yet in this chasm of nature, by the help of the camel the Arabian finds safety and subsistence. There are here and there found spots of verdure, which, though remote from each other, are, in a manner, approximated by the labour and industry of the camel. Thus these deserts, which present the stranger with nothing but objects of danger and sterility, afford the inhabitant protection, food, and liberty. The Arabian lives independent and tranquil in the midst of his solitudes;

and, instead of considering the vast solitudes spread round him as a restraint upon his happiness, he is, by experience, taught to regard them as the ramparts of his freedom.

The camel is easily instructed in the methods of taking up and supporting his burden: their legs, a few days after they are produced, are bent under their belly; they are in this manner loaded, and taught to rise; their burden is every day thus increased, by insensible degrees, till the animal is capable of supporting a weight adequate to its force. The same care is taken in making them patient of hunger and thirst: while other animals receive their food at stated times, the camel is restrained for days together, and these intervals of famine are increased in proportion as the animal seems capable of sustaining them. By this method of education, they live five or six days without food or water; and their stomach is formed most admirably by nature to fit them for long abstinence: besides the four stomachs which all animals have that chew the cud, (and the camel is one of the number,) it has a fifth stomach, which serves as a reservoir, to hold a greater quantity of water than the animal has an immediate occasion for. It is of a sufficient capacity to contain a large quantity of water, where the fluid remains without corrupting, or without being adulterated by the other aliments. When the camel finds itself pressed with thirst, it has here an easy resource for quenching it; it throws up a quantity of this water, by a simple contraction of the muscles, into the other stomachs, and this serves to macerate its dry and simple food: in this manner, as it drinks but seldom, it takes in a large quantity at a time; and travellers, when straitened for water, have been often known to kill their camels for that which they expected to find within them.

In Turkey, Persia, Arabia, Barbary, and Egypt, their whole commerce is carried on by means of camels: No carriage is more speedy, and none less expensive in these countries. Merchants and travellers unite themselves into a body, furnished with camels, to secure themselves from the insults of the robbers that infest the countries in which they live. This assemblage is called a *caravan*, in which the numbers are sometimes known to amount to above ten thousand, and the number of camels is often greater than those of the men: each of these animals is loaded according to his strength, and he is so sensible of it himself, that when his burden is too great, he remains still upon his belly, the posture in which he is loaden, refusing to rise till his burden be lessened or taken away. In general, the large camels are capable of carrying a thousand weight, and sometimes twelve hundred; the dromedary, from six to seven. In these trading journeys they travel but slowly, their stages are generally regulated, and they seldom go above thirty, or at most above five and-thirty miles a-day. Every evening when they arrive at a stage, which is usually some spot of verdure where water and shrubs are in plenty, they are permitted to feed at liberty; they are then seen to eat as much in an hour as will supply them for twenty-four: they seem to prefer the coarsest weeds to the softest pasture; the thistle, the nettle, the cassia, and other prickly vegetables, are their favourite food; but their drivers take care to supply them with a kind of paste composition, which serves as a more permanent nourishment. As these animals have often gone the same track, they are said to know their way precisely, and to pursue their passage when their guides are utterly astray: when they come within a few miles of their baiting place in the evening, they sagaciously scent it at a distance, and, increas-

ing their speed, are often seen to trot with vivacity to their stage.

The patience of this animal is most extraordinary; and it is probable that its sufferings are great, for when it is loaded, it sends forth most lamentable cries, but never offers to resist the tyrant that oppresses it. At the slightest sign it bends its knees and lies upon its belly, suffering itself to be loaded in this position; by this practice the burden is more easily laid upon it than if lifted up while standing: at another sign it rises with its load; and the driver getting upon its back, between the two panniers, which like hampers are placed upon each side, he encourages the camel to proceed with his voice and with a song. In this manner the creature proceeds contentedly forward, with a slow uneasy walk of about four miles an hour, and when it comes to its stage, lies down to be unloaded as before.

M. Buffon seems to consider the camel to be the most domesticated of all other creatures, and to have more marks of the tyranny of man imprinted on its form. He is of opinion, that this animal is not now to be found in a state of nature; that the humps on its back, the calosities upon its breast and its legs, and even the great reservoir for water, are all marks of long servitude and domestic constraint. The deformities he supposes to be perpetuated by generation, and what at first was accident at last becomes nature. However this be, the humps upon the back grow large in proportion as the animal is well fed, and if examined, they will be found composed of a substance not unlike the udder of a cow.

The Arabs generally leave but one male to wait on ten females; the rest they castrate; and though they thus become weaker, they are more manageble and patient. The female receives the male in the same position as when these animals are loaded;

she goes with young for about a year, and, like all other great animals, produces but one at a time. The camel's milk is abundant and nourishing, and mixed with water, makes a principal part of the beverage of the Arabians. These animals begin to engender at three years of age, and they ordinarily live from forty to fifty years. The genital part of the male resembles that of the bull, but is placed pointing backwards, so that its urine seems to be ejected in the manner of the female. This, as well as the dung, and almost every part of this animal, is converted to some useful purpose by the keepers. Of the urine, sal ammoniac is made; of the dung, litter for the horses, and fire for the purpose of dressing their victuals. Thus this animal alone seems to comprise within itself a variety of qualities, any one of which serves to render other quadrupeds absolutely necessary for the welfare of man: like the elephant it is manageable and tame; like the horse, it gives the rider security; it carries greater burdens than the ox or the mule; and its milk is furnished in as great abundance as that of the cow; the flesh of the young ones is supposed be as delicate as veal; their hair is more beautiful, and more in request than wool; while even of its very excrements no part is useless.

CHAPTER XII.

THE LAMA.

As almost all the quadrupeds of America are smaller than the resembling ones of the ancient continent, so the Lama, which may be considered as the camel of the new world, is every way less than

that of the old. This animal, like that described in the former chapter, stands high upon its legs, has a long neck, a small head, and resembles the camel, not only in its natural mildness, but its aptitude for servitude, its moderation and its patience. The Americans early found out its useful qualities, and availed themselves of its labours: like the camel, it serves to carry goods over places inaccessible to other beasts of burden; like that it is obedient to its driver, and often dies under, but never resists his cruelty.

Of these animals some are white, others black, but they are mostly brown; its face resembles that of the camel, and its height is about equal to that of an ass. They are not found in the ancient continent, but entirely belong to the new; nor are they spread over all America, but are found chiefly upon those mountains that stretch from New Spain to the Straits of Magellan. They inhabit the highest regions of the globe, and seem to require purer air than animals of a lower situation are found to enjoy. Peru seems to be the place where they are found in greatest plenty. In Mexico they are introduced rather as curiosities than beasts of burden; but in Potosi, and other provinces of Peru, they make the chief riches of the Indians and Spaniards who rear them: their flesh is excellent food; their hair, or rather wool, may be spun into beautiful clothing; and they are capable, in the most rugged and dangerous ways, of carrying burdens not exceeding a hundred weight, with the greatest safety. It is true indeed that they go but slowly, and seldom above fifteen miles a-day; their tread is heavy, but sure; they descend precipices, and find footing among the most craggy rocks, where even men can scarcely accompany them: they are, however, but feeble animals; and after four or five days' labour, they are obliged to repose for a

day or two. They are chiefly used in carrying the riches of the mines of Potosi; and we are told that there are above three hundred thousand of these animals in actual employ.

This animal, as was said before, is above three feet high, and the neck is three feet long; the head is small and well-proportioned, the eyes large, the nose long, the lips thick, the upper divided, and the lower a little depending; like all those animals that feed upon grass, it wants the upper cutting teeth; the ears are four inches long, and move with great agility; the tail is but five inches long—it is small, straight, and a little turned up at the end; it is cloven-footed, like the ox, but it has a kind of spear-like appendage behind, which assists it in moving over precipices and rugged ways; the wool on the back is short, but long on the sides and the belly; it resembles the camel in the formation of the genital parts in the male, so that it makes urine backwards; it couples also in the same manner, and though it finds much difficulty in the action, it is said to be much inclined to venery. A whole day is often passed before this necessary business can be completed, which is spent in growling, quarrelling, and spitting at each other: they seldom produce above one at a time, and their age never extends above ten or twelve years at farthest.

Though the lama is no way comparable to the camel, either for size, strength, or perseverance, yet the Americans find a substitute in it, with which they seem perfectly contented. It appears formed for that indolent race of masters which it is obliged to serve; it requires no care, nor no expense in the attending or providing for its sustenance; it is supplied with a warm covering, and therefore does not require to be housed; satisfied with vegetables and grass, it wants neither corn nor hay to subsist it; it is not less mode-

rate in what it drinks, and exceeds even the camel in temperance. Indeed, of all other creatures, it seems to require water least, as it is supplied by nature with saliva in such large quantities, that it spits it out on every occasion: this saliva seems to be the only offensive weapon that the harmless creature has to testify its resentment. When overloaded or fatigued, and driven on by all the torturing acts of its keeper, it falls on its belly, and pours out against him a quantity of this fluid, which, though probably no way hurtful, the Indians are much afraid of. They say, that wherever it falls, it is of such an acrimonious nature, that it will either burn the skin, or cause very dangerous eruptions.

Such are these animals in their domestic state; but as they are found wild in very great numbers, they exhibit marks of great force and agility in their state of nature. The stag is scarcely more swift, or the goat or the chamois a better climber. All its shapes are more delicate and strong; its colour is tawny, and its wool is but short. In their native forests they are gregarious animals, and are often seen in flocks of two or three hundred at a time. When they perceive a stranger, they regard him at first with astonishment, without marking any fear or surprise; but shortly, as if by common consent, they snuff up the air, somewhat like horses, and at once, by a common flight, take refuge on the tops of the mountains. They are fonder of the northern than the southern side of the Andes; they often climb above the snowy tracts of the mountain, and seem vigorous in proportion to the coldness of their situation. The natives hunt the wild lama for the sake of its fleece. If the dogs surprise one upon the plain, they are generally successful; but if once the lama obtains the rocky precipice of the mountain, the hunters are obliged to desist in their pursuit.

The lama seems to be the largest of the camel kind in America: there are others, which are called Guanacoes and Pacos, that are smaller and weaker, but endued with the same nature, and formed pretty much in the same manner. They seem to bear the same proportions to each other that the horse does to the ass, and are employed with the same degree of subordination. The wool however of the paco seems to be the most valuable; and it is formed into stuffs not inferior to silk, either in price or beauty. The natural colour of the paco is that of a dried rose-leaf; the manufacturers seldom give its wool any other dye, but form it into quilts and carpets, which exceed those from the Levant. This manufacture forms a very considerable branch of commerce in South America; and probably too, might be extended to Europe, were the beauty and the durability of what is thus wrought up sufficiently known.

CHAPTER XIII.

THE NYL-GHAU.

This animal, the name of which is pronounced Nylgaw, is a native of India, and has but lately been imported into Europe; it seems to be of a middle nature, between the cow and the deer, and carries the appearance of both in its form. In its size, it is as much smaller than the one, as it is larger than the other; its body, horns, and tail, are not unlike those of a bull; and the head, neck, and legs, are very like those of a deer. The colour, in general, is ash or gray, from a mixture of black hairs and white; all along the ridge or edge of the neck, the

hair is blacker, larger, and more erect, making a short, thin, and upright mane. Its horns are seven inches long; they are six inches round at the root; growing smaller by degrees, they terminate in a blunt point. The bluntness of these, together with the form of its head and neck, might incline us to suppose it was of the deer kind; but, as it never sheds its horns, it has a greater affinity to the cow.*

From the disposition of that brought over to this country, which has been very accurately and minutely described by Dr. Hunter, their manners are harmless and gentle. Although in its native wildness it is said to be fierce and vicious, this seemed pleased with every kind of familiarity, and always licked the hand that stroked or gave it bread, and never once attempted to use its horns offensively: it seemed to have much dependance on its organs of smell, and snuffed keenly, and with noise, whenever any person came within sight; it did so likewise when any food or drink was brought to it; and was so easily offended with smells, or so cautious, that it would not taste the bread which was offered when the hand happened to smell strong of turpentine. Its manner of fighting is very particular. It was observed at Lord Clive's, where two males were put into a little enclosure, that, while they were at a considerable distance from each other, they prepared for the attack by falling upon their fore-knees, then they shuffled towards each other with a quick pace, keeping still upon their fore-knees; and when they were come within some yards, they made a spring, and darted against each other. The intre-

[* This animal, sometimes called the White-footed Antelope, is in height four feet one inch to the top of the shoulders, and four feet long from the bottom of the neck to the base of the tail. Its ears are beautiful, about seven inches in length, and of a considerable breadth; they are white on the edge and on the inside, except where two black bands mark the hollow of the ear with a zebra-like variety. The feet are barred with black and white.]

pidity and force with which they dart against any object, appeared by the strength with which one of them attempted to overturn a poor labourer who unthinkingly stood on the outside of the pales of its enclosure. The nyl-ghau, with the quickness of lightning, darted against the wood-work with such violence, that he broke it to pieces, and broke off one of his horns close to the root, which occasioned the animal's death. At all the places in India where we have settlements, they are considered as rarities, and brought from the distant interior parts of the country. The emperor sometimes kills them in such numbers, as to distribute quarters of them to all his omrahs; which shows that they are internally wild and in plenty, and esteemed good and delicious food. The nyl-ghaus which have been brought to England, have been most, if not all of them, received from Surat or Bombay, and they seem to be less uncommon in that part of India than in Bengal; which gives room for a conjecture, that they may be indigenous, perhaps, in the province of Guzarat, one of the most western and the most considerable of the Hindostan empire, lying to the northward of Surat, and stretching away to the Indian Ocean.

CHAPTER XIV.

THE BEAR.

Of the Bear there are three different kinds; the brown bear of the Alps, the black bear of North America, which is smaller, and the great Greenland, or white bear.* These, though different in their

[* The Bear, Badger, and Racoon, have six fore-teeth in the upper jaw, alternately hollow on the insides and six in the under jaw, the two

Pl. 34

F. Kearny Sc.

1 Beaver 2 Brown Bear 3 Greenland Bear

forms, are no doubt of the same original, and owe their chief variations to food and climate. They have all the same habitudes, being equally carnivorous, treacherous, and cruel. It has been said, indeed, that the black bear of America rejects animal food; but of the contrary I am certain, as I have often seen the young ones which are brought over to London, prefer flesh to every kind of vegetable aliment.

The brown bear is properly an inhabitant of the temperate climates; the black finds subsistence in the northern regions of Europe and America; while the great white bear takes refuge in the most icy climates, and lives where scarce any other animal can find subsistence.

The brown bear* is not only savage, but solitary; he takes refuge in the most unfrequented parts, and the most dangerous precipices of uninhabited mountains. It chooses its den in the most gloomy parts of the forest, in some cavern that has been hollowed by time, or in the hollow of some old enormous tree. There it retires alone, and passes some months of the winter without provisions, or without ever stirring abroad. However, this animal is not entirely deprived of sensation, like the bat or the dormouse, but seems rather to subsist upon the exuberance of its former flesh, and only feels the calls of appetite, when the fat it had acquired in summer begins to be entirely wasted away. In this manner, when the bear retires to its den to hide for the winter, it is extremely fat, but at the end of forty or fifty days, when it comes forth to seek for fresh nourishment, it seems to have slept all its flesh away. It is a com-

lateral ones being lobated. The dog-teeth are solitary and conical; the eyes are furnished with a nictitating membrane: and the tongue is smooth.]

* Buffon.

mon report, that during this time they live by sucking their paws, which is a vulgar error that scarcely requires confutation. These solitary animals couple in autumn, but the time of gestation with the female is still unknown. The female takes great care to provide a proper retreat for her young; she secures them in the hollow of a rock, and provides a bed of hay in the warmest part of her den; she brings forth in winter, and the young ones begin to follow her in spring. The male and female by no means inhabit the same den; they have each their separate retreat, and seldom are seen together but upon the accesses of genial desire.

The voice of the bear is a kind of growl, interrupted with rage, which is often capriciously exerted; and though this animal seems gentle and placid to its master, when tamed, yet it is still to be distrusted, and managed with caution, as it is often treacherous and resentful without a cause.

This animal is capable of some degree of instruction. There are few but have seen it dance in awkward measures upon its hind-feet, to the voice or the instrument of its leader; and it must be confessed, that the dancer is often found to be the best performer of the two. I am told, that it is first taught to perform in this manner, by setting it upon hot plates of iron, and then playing to it while in this uneasy situation.

The bear, when come to maturity, can never be tamed; it then continues in its native fierceness, and, though caged still formidably impotent, at the approach of its keeper flies to meet him. But notwithstanding the fierceness of this animal, the natives in those countries where it is found, hunt it with great perseverance and alacrity. The least dangerous method of taking it is by intoxicating it, by throwing brandy upon honey, which it seems to be chiefly

fond of, and seeks for in the hollow of trees. In Canada, where the black bears are very common, and where their dens are made in trees that are hollow towards the top, they are taken by setting fire to their retreats, which are often above thirty feet from the ground. The old one is generally seen first to issue from her den, and is shot by the hunters. The young ones, as they descend, are caught in a noose, and are either kept or killed for provision. Their paws are said to be a great delicacy, and their hams are well enough known at the tables of the luxurious here. Their fat also, which still preserves a certain degree of fluidity, is supposed to be an efficacious remedy in white or indolent tumours, though probably very little superior to hog's-lard.

The white Greenland bear differs greatly, both in figure and dimensions, from those already described, and though it preserves in general the external form of its more southern kindred, yet it grows to above three times the size. The brown bear is seldom above six feet long; the white bear is often known from twelve to thirteen. The brown bear is made rather stronger and sturdy, like the mastiff; the Greenland bear, though covered with very long hair, and apparently bulky, is nevertheless more slender, both as to the head, neck, and body, and more inclined to the shape of the greyhound. In short, all the variations of its figure and its colour seem to proceed from the coldness of the climate where it resides, and the nature of the food it is supplied with.

The white bear seems the only animal that, by being placed in the coldest climate, grows larger than those that live in the temperate zones. All other species of animated nature diminish as they approach the poles, and seem contracted in their size by the rigours of the ambient atmosphere; but the bear,

being unmolested in these desolate climates, and meeting no animal but what he can easily conquer, finding also a sufficient supply of fishy provisions, he grows to an enormous size; and as the lion is the tyrant of an African forest, so the bear remains undisputed master of the icy mountains in Spitzbergen and Greenland. When our mariners land upon those shores, in such parts as have not been frequented before, the white bears come down to view them with an awkward curiosity: they approach slowly, seeming undetermined whether to advance or retreat; and being naturally a timorous animal, they are only urged on by the conscious experience of their former victories; however, when they are shot at, or wounded, they endeavour to fly; or, finding that impracticable, they make a fierce and desperate resistance till they die. As they live upon fish and seals, their flesh is too strong for food, and the captors have nothing but the skin to reward them for the dangers incurred in the engagement.

The number of these animals that are found about the north pole, if we consider the scarcity there of all other terrestrial creatures, is very amazing. They are not only seen at land, but often on ice-floats several leagues at sea. They are often transported in this manner to the very shores of Iceland, where they no sooner land but all the natives are in arms to receive them. It often happens, that when a Greenlander and his wife are paddling out at sea, by coming too near an ice-float, a white bear unexpectedly jumps into their boat, and if he does not overset it, sits calmly where he first came down, and like a passenger suffers himself to be rowed along. It is probable the poor little Greenlander is not very fond of his new guest; however, he makes a virtue of necessity, and hospitably rows him to shore.

As this animal lives chiefly upon fish, seals, and

dead whales, it seldom removes far from the shore. When forced by hunger, it often ventures into the deep, swims after seals, and devours whatever it can seize: it is however but a bad swimmer, and it is often hunted in this manner by boats, till it is fatigued, and at last destroyed. It often happens that a battle ensues between a bear and a morse, or a whale; but as the latter are more expert in their own element, they generally prove victorious. However, when the bear can find a young whale, it repays him for the danger he incurs of meeting with the parent.

CHAPER XV.

THE BADGER.

The Badger's legs are so short, that its belly seems to touch the ground; this however is but a deceitful appearance, as it is caused by the length of the hair, which is very long all over the body, and makes it seem much more bulky than it really is. It is a solitary stupid animal, that finds refuge remote from man, and digs itself a deep hole with great assiduity. It seems to avoid the light, and seldom quits its retreat by day, only stealing out at night to find subsistence. It burrows in the ground very quickly, its legs being short and strong, and its claws stiff and horny. As it continues to bury itself, it throws the earth behind it to a great distance, and thus forms to itself a winding hole, at the bottom of which it remains in safety. As the fox is not so expert at digging into the earth, it often takes possession of that which has been quitted by the badger, and some

say, forces it from its retreat, by laying its excrements at the mouth of the badger's hole.

This animal, however, is not long in making itself a new habitation, from which it seldom ventures far, as it flies but slowly, and can find safety only in the strength of its retreat. When it is surprised by the dogs at some distance from its hole, it then combats with desperate resolution; it falls upon its back, defends itself on every side, and seldom dies unrevenged in the midst of its enemies.

The badger, like the fox, is a carnivorous animal, and nothing that has life can come amiss to it. It sleeps the greatest part of its time, and thus, without being a voracious feeder, it still keeps fat, particularly in winter. They always keep their hole very clean; and when the female brings forth, she makes a comfortable warm bed of hay at the bottom of her hole, for the reception of her young. She brings forth in summer, generally to the number of three or four, which she feeds at first with her milk, and afterwards with such petty prey as she can surprise. She seizes the young rabbits in their warren, robs birds' nests, finds out where the wild bees have laid up their honey, and brings all to her expecting brood.

The young ones when taken are easily tamed, but the old still continue savage and incorrigible: the former, after a short time, play with the dogs, follow their masters about the house, but seem of all other animals the most fond of the fire. They often approach it so closely, that they burn themselves in a dangerous manner. They are sometimes also subject to the mange, and have a gland under their tail which scents pretty strongly. The poor of some countries eat their flesh, which, though fat, is at best but rank and ill tasted.

W. E. Tucker Sc.

1. Axis — 2. Tapir — 3. Zebra.

CHAPTER XVI.

THE TAPIR.

THERE seems to be a rude, but inferior resemblance between many animals of the old and the new world. The couguar of America resembles the tiger in natural ferocity, though far inferior in its dimensions. The lama bears some affinity to the camel, but is far behind it in strength and utility. The Tapir* may be considered as the hippopotamus of the new continent, but degraded both as to its size and ferocity.

This animal bears some distant resemblance in its form to a mule. It has a long snout, which it lengthens or contracts at pleasure. Its ears are small, long, and pendant. Its neck and tail are short, and its claws strong and firm, of which it has four upon each foot. Its skin is thick, and covered with brown hair, and the natives make shields of it, which cannot be pierced by an arrow.

This animal may in some measure be termed amphibious, as it chiefly resides in the water. It differs however from all others of this kind, in feeding entirely upon vegetables, and not making this element the place of its depredations. It feeds upon the pastures by the river side, and as it is very timorous, the instant it hears the least noise, it plunges into the stream. They are greatly sought after by the natives, as their flesh is considered as a delicacy, and thought by some not inferior to beef.

[* This animal has ten cutting teeth, and ten grinders in each jaw; between the cutting teeth and the grinders there is a vacant space. Its legs are short, and the hoofs small, black, and hollow; the fore-hoofs are divided into four, and the hind-hoofs in three parts.]

CHAPTER XVII.

THE RACOON.

The Racoon, which some authors have called the Jamaica rat, is about the size of a small badger; its body is short and bulky; its fur is fine, long, and thick, blackish at the surface, and gray towards the bottom; the nose is rather shorter, and more pointed than that of a fox; the eyes large and yellow, the teeth resembling those of a dog, the tail thick, but tapering towards a point, regularly marked with rings of black, and at least as long as the body; the fore-feet are much shorter than the hinder, both armed with five sharp claws, with which, and his teeth, the animal makes a vigorous resistance. Like the squirrel, it makes use of its paws to hold its food while eating, but it differs from the monkey kind, which use but one hand on those occasions, whereas the racoon and the squirrel use both, as, wanting the thumb, their paws singly are unfit for grasping or holding. Though this animal be short and bulky, it is however very active; its pointed claws enable it to climb trees with great facility; it runs on the trunk with the same swiftness that it moves upon the plain, and sports among the most extreme branches with great agility, security, and ease: it moves forward chiefly by bounding, and though it proceeds in an oblique direction, it has speed enough most frequently to escape its pursuers.

This animal is a native of the southern parts of America, nor have any travellers mentioned its being found in the ancient continent. But in the climates of which it is a native, it is found in noxious abundance, particularly in Jamaica, where it keeps in the mountains, and where it often descends to

Pl. 36.

F. Kearny Sc.

1 Racoon _ 2 Agouti _ 3 Brown Coati _ 4 Black Coati

feed upon the plantations of sugar-cane. The planters of these climates consider these animals as one of their greatest miseries: they have contrived various methods of destroying them, yet still they propagate in such numbers that neither traps nor firearms can set them free; so that a swarm of these famished creatures are found to do more injury in a single night, than the labours of a month can repair.

But though, when wild, they are thus troublesome, in a state of tameness no animal is more harmless or amusing; they are capable of being instructed in various little amusing tricks. The racoon is playful and cleanly, and is very easily supported; it eats of every thing that is given it, and if left to itself, no cat can be a better provider: it examines every corner, eats of all flesh, either boiled or raw, eggs, fruits, or corn; insects themselves cannot escape it; and if left at liberty in a garden, it will feed upon snails, worms, and beetles: but it has a particular fondness for sweets of every kind, and to be possessed of these in its wild state, it incurs every danger. Though it will eat its provisions dry, it will for choice dip them in water if it happens to be in the way. It has one peculiarity which few other animals have been found to possess, it drinks as well by lapping like the dog, as by sucking like the horse.

CHAPTER XVIII.

THE COATIMONDI.

The first peculiarity with which this animal strikes the spectator, is the extreme length of its snout, which in some measure resembles that of the hog, but elongated to a surprising degree. It bears some

distant resemblance to the animal last described, except that the neck and the body are longer, the fur shorter; and the eyes smaller; but its principal distinction, as was said before, consists in the shape of its nose, the upper jaw being an inch longer than the lower, and the snout, which is moveable in every division, turning up at the end. Like the racoon, it sits up on the hinder legs with great ease, and in this position, with both paws, carries the food to its mouth.

This animal is very subject to eat its own tail, which is rather longer than its body; but this strange appetite is not peculiar to the coati alone; the mococo, and some of the monkey kinds, do the same, and seem to feel no pain in wounding a part of the body so remote from the centre of circulation.

It seems possessed of the same playful qualities, and indiscriminate appetites, with the animal described in the last chapter. If left at liberty in a state of tameness, it will pursue the poultry, and destroy every living thing that it has strength to conquer: though it is playful with its keeper, yet it seems obstinately bent against receiving any instruction, and neither threats nor caresses can induce it to practise any arts to which it is not naturally inclined. When it sleeps, it rolls itself up in a lump, and in that position often continues for fourteen or fifteen hours together.

CHAPTER XIX.

THE ANT-BEAR.

THERE are many animals that live upon ants in Africa and America; the pangolin, or scaly lizard of Guinea, may be considered among this number; but

there are a greater variety in America, which make those minute insects their only subsistence. Though they are of different figures and sizes, yet in general they go under one common name of the Ant-Bear; the peculiar length and slenderness of their snout, their singular appetites, and their manner of taking their prey, striking us too strongly to attend to the minute differences of their size or form.

They have been classed by M. Buffon into the larger Tamandua, the smaller Tamandua, and the Ant-eater. The largest of this kind is four feet long, from the tip of the snout to the insertion of the tail; their legs are short, and armed with four strong claws; their tail is long and tufted, and the animal often throws it on its back like the squirrel. The second of this kind is not above eighteen inches long; the tail is without hair, and it sweeps the ground as the animal moves. The ant-eater, which is the third variety, is still smaller than either of the former, as it is not above seven inches from the tip of the snout to the insertion of the tail. The two former are of a brown dusky colour, but this of a beautiful reddish, mixed with yellow: though they differ in figure, they all resemble each other in one peculiarity, which is the extreme slenderness of their snout, and the amazing length of their tongue.

The snout is produced in so disproportionate a manner, that the length of it makes near a fourth part of the whole figure. A horse has one of the longest heads of any animal we know, and yet the ant-bear has one above twice as long in proportion to its body. The snout of this animal is almost round and cylindrical; it is extremely slender, and is scarce thicker near the eyes than at its extremity. The mouth is very small, the nostrils are very close to each other, the eyes are little in proportion to the length of the nose, the neck is short, and the tongue

is extremely long, slender, and flatted on both sides; this it keeps generally doubled up in the mouth, and is the only instrument by which it finds subsistence; for the whole of this tribe are entirely without teeth, and find safety only in the remoteness and security of their retreat.

If we examine through the various regions of the earth, we shall find that all the most active, sprightly, and useful quadrupeds have been gathered round man, and either served his pleasures, or still maintained their independence by their vigilance, their cunning, or their industry. It is in the remote solitudes that we are to look for the helpless, the deformed, and the monstrous births of nature. These wretched animals being incapable of defending themselves, either by their agility or their natural arms, fall a prey to every creature that attacks them; they therefore retire for safety into the darkest forests, or the most desert mountains, where none of the bolder or swifter animals choose to reside.

It may well be supposed that an animal so helpless as the ant-bear is, with legs too short to fit it for flight, and unprovided with teeth to give it a power of resistance, is neither numerous, nor often seen; its retreats are in the most barren and uncultivated parts of South America. It is a native only of the new continent, and entirely unknown to the old. It lives chiefly in the woods, and hides itself under the fallen leaves. It seldom ventures from its retreat; and the industry of an hour supplies it with sufficient food for several days together. Its manner of procuring its prey is one of the most singular in all natural history: as its name implies, it lives entirely upon ants and insects; these, in the countries where it is bred, are found in the greatest abundance, and often build themselves hills five or six feet high, where they live in community. When this animal

approaches an ant-hill, it creeps slowly forward on its belly, taking every precaution to keep itself concealed, till it comes within a proper distance of the place where it intends to make its banquet; there lying closely along at its length, it thrusts forth its round red tongue, which is often two feet long, across the path of these busy insects, and there lets it lie motionless for several minutes together. The ants of that country, some of which are half an inch long, considering it as a piece of flesh accidentally thrown before them, come forth and swarm upon it in great numbers; but wherever they touch they stick; for this instrument is covered with a slimy fluid, which, like bird-lime, entangles every creature that lights upon it. When therefore the ant-bear has found a sufficient number for one morsel, it instantly draws in the tongue, and devours them all in a moment, after which it still continues in its position, practising the same arts until its hunger is entirely appeased: it then retires to its hiding-place once more, where it continues in indolent existence till again excited by the calls of hunger.

Such is the luxurious life of a creature, that seems of all others the most helpless and deformed. It finds safety in its hiding-places from its enemies, and an ample supply in some neighbouring ant-hill for all its appetites. As it only tries to avoid its pursuers, it is seldom discovered by them; yet helpless as this animal is, when driven to an extremity, though without teeth, it will fight with its claws with great obstinacy. With these arms alone it has often been found to oppose the dog, and even the jaguar. It throws itself upon its back, fastens upon its enemy with all its claws, sticks with great strength and perseverance, and even after killing its invader, which is sometimes the case, does not quit its hold, but remains fastened upon it with vindictive desperation.

[THE PLATYPUS.

THE Duck-billed Platypus was first noticed by Dr. Shaw, in his Naturalist's Miscellany; but as the animal there described was the only one which had at that time been seen, it was difficult to preserve the mind from entertaining some doubts as to its genuine nature, and from surmising that some arts of deception in its structure might have been practised. These suspicions, however, are now satisfactorily removed; other specimens having been sent by Governor Hunter from New Holland, (of which it is a native,) to Sir Joseph Banks.

* "Of all the mammalia yet known, this seems the most extraordinary in its conformation, exhibiting the perfect resemblance of the beak of a duck engrafted on the head of a quadruped. So accurate is the similitude, that at first view it naturally excites the idea of some deceptive preparation by artificial means; the very epidermis, proportion, serratures, manner of opening, and other particulars of the beak of a shoveller, or other broad-billed species of duck, presenting themselves to the view; nor is it without the most minute and rigid examination, that we can persuade ourselves of its being the real beak or snout of a quadruped.

"The body is depressed, and has some resemblance to that of an otter in miniature; it is covered with a very thick, soft, and beaver-like fur, and is of a moderately dark brown above, and of a sub-ferruginous white beneath. The head is flattish, and rather small than large; the mouth or snout, as before observed, so exactly resembles that of some broad-billed species of duck, that it might be mistaken for such; round the base is a flat circular mem-

* Shaw's Zoology.

brane, somewhat deeper or wider below than above; viz. below, near the fifth of an inch, and above, about an eighth. The tail is flat, furry like the body, rather short and obtuse, with an almost bifid termination; it is broader at the base, and gradually lessens to the tip, and is about three inches in length; its colour is similar to that of the body. The length of the whole animal, from the tip of the beak to that of the tail, is thirteen inches; of the beak, an inch and half. The legs are very short, terminating in a broad web, which on the fore-feet extends to a considerable distance beyond the claws, but on the hind-feet reaches no farther than the roots of the claws. On the fore-feet are five claws, straight, strong, and sharp-pointed; the two exterior ones somewhat shorter than the three middle ones. On the hind-feet are six claws, longer, and more inclining to a curved form than those on the fore-feet; the exterior toe and claw are considerably shorter than the four middle ones; the interior or sixth is seated much higher up than the rest, and resembles a strong sharp spur. All the legs are hairy above; the fore-feet are naked both above and below; but the hind-feet are hairy above, and naked below. The internal edges of the under mandible, (which is narrower than the upper,) are serrated or channelled with numerous striæ, as in a duck's bill. The nostrils are small and round, and are situated about a quarter of an inch from the tip of the bill, and are about the eighth of an inch distant from each other. There is no appearance of teeth; the palate is removed, but seems to have resembled that of a duck; the tongue also is wanting in the specimen. The ears, or auditory foramina, are placed about an inch beyond the eyes; they appear like a pair of oval holes, of the eighth of an inch in diameter, there being no external ear. On the upper part of the head, on each side, a little be-

yond the beak, are situated two smallish oval white spots, in the lower part of each of which are imbedded the eyes, or at least the parts allotted to the animal for some kind of vision; for, from the thickness of the fur, and the smallness of the organs, they seem to have been but obscurely calculated for distinct vision; and are probably like those of moles, and some other animals of that tribe, or perhaps even subcutaneous, the whole apparent diameter of the cavity in which they were placed not exceeding the tenth of an inch.

"When we consider the general form of this animal, and particularly its bill and webbed feet, we shall readily perceive that it must be a resident in watery situations; that it has the habit of digging or burrowing in the banks of rivers, or under ground; and that its food consists of aquatic plants and animals. This is all that can at present be reasonably guessed at; future observations, made in its native regions, will, it is hoped, afford us more ample information, and will make us fully acquainted with the natural history of an animal which differs so widely from all other quadrupeds, and which verifies in a most striking manner the observation of Buffon, viz. "that whatever was possible for nature to produce, has actually been produced."

On a minute examination of the platypus it was discovered, that the beak is not the mouth of the animal, but merely a projection of the bones of the nose and palate, serving it instead of fore-teeth; that the mouth is seated behind this projection; and that the tongue, which is about half an inch long, can be drawn entirely into the mouth. On laying open the parts beyond the base of the bill, it appeared that the platypus, like the ant-bear, is furnished with small long processes, resembling grinding teeth, imbedded in the gum, but not rooted in the jaw; and

of these processes there are two on each side, both of the upper and under jaw.*]

CHAPTER XX.

OF THE SLOTH.

Of the Sloth there are two different kinds, distinguished from each other by their claws; the one, which in its native country is called the Unan, having only two claws upon each foot, and being without a tail; the other, which is called the Ai, having a tail, and three claws upon each foot. The unan has the snout longer, the ears more apparent, and the fur very different from the other. It differs also in the number of its ribs, this having forty-six, while the ai has but twenty-eight. These differences, however, though very apparent, have been but little regarded in the description of two animals which so strongly resemble each other in the general outlines of their figure, in their appetites, and their helpless formation.

They are both, therefore, described under the common appellation of the Sloth, and their habitudes well deserve our wonder and curiosity.† Nature seems cramped and constrained in their formation: other animals are often indolent from choice, these are slow from necessity. The ai, from which I shall take my description, and from which the other differs only in the slight particulars above-mentioned,

* Phil. Trans. vol. xc.

[† The sloth has no fore-teeth in either jaw; the dog-teeth are blunt, solitary, and longer than the grinders; and there are five grinders on each side. The fore-legs are considerably longer than the hind ones, and the claws are long, and very strong.]

and in being rather more active, is of about the size of a badger. Its fur is coarse and staring, somewhat resembling dried grass; the tail very short, and scarce appearing; the mouth extending from ear to ear; the eye dull and heavy; the feet armed with three claws each, and made so short, and set on so awkwardly, that a few paces is often the journey of a week; but though the feet are short, they are still longer than its legs, and these proceed from the body in such an oblique direction, that the sole of the foot seldom touches the ground. When the animal, therefore, is compelled to make a step forward, it scrapes on the back of the nails along the surface, and wheeling the limbs circularly about, yet still touching the ground, it at length places its foot in a progressive position; the other three limbs are all brought about with the same difficulty; and thus it is seen to move not above three feet in an hour. In fact, this poor creature seldom changes place but by constraint, and when impelled by the severest stings of hunger.

The sloth seems to be the meanest and most ill-formed of all those animals that chew the cud; it lives entirely upon vegetable food, on the leaves, the fruit, and the flowers of trees, and often even on the very bark, when nothing else is left on the tree for its subsistence. Like all other ruminant animals, it has four stomachs; and these requiring a large share of provision to supply them, it generally strips a tree of all its verdure in less than a fortnight. Still however it keeps aloft, unwilling to descend while any thing remains that can serve it for food; it therefore falls to devouring the bark, and thus in a short time kills the tree upon which it found its support. Thus destitute of provisions above, and crawling slowly from branch to branch, in hopes of finding something still left, it is at last obliged to encounter all the dangers that attend it below. Though it is

formed by nature for climbing a tree with great pain and difficulty, yet it is utterly unable to descend; it therefore is obliged to drop from the branches to the ground, and as it is incapable of exerting itself to break the violence of its descent, it drops like a shapeless, heavy mass, and feels no small shock in the fall. There, after remaining some time torpid, it prepares for a journey to some neighbouring tree: but this, of all migrations is the most tedious, dangerous, and painful; it often takes a week in crawling to a tree not fifty yards distant; it moves with imperceptible slowness, and often baits by the way. All motions seem to torture it; every step it takes it sets forth a most plaintive melancholy cry, which from some distant similitude to the human voice, excites a kind of disgust, mixed with pity. This plaintive sound seems its chief defence; few quadrupeds appear willing to interrupt its progress, either that the flesh is offensive, or that they are terrified at its cries. When at length they reach their destined tree, they mount it with much greater ease than when they moved upon the plain. They fall to with famished appetite, and, as before, destroy the very source that supplies them.

How far these may be considered as the unfinished productions of nature, I will not take upon me to determine: if we measure their happiness by our sensations, nothing, it is certain, can be more miserable; but it is probable, considered with regard to themselves, they may have some stores of comfort unknown to us, which may set them upon a level with some other inferior ranks of the creation; if a part of their life be exposed to pain and labour, it is compensated by a larger portion of plenty, indolence, and safety. In fact, they are formed very differently from all other quadrupeds, and it is probable they have different enjoyments. Like birds, they have

but one common vent for the purposes of propagation, excrement and urine. Like the tortoise, which they resemble in the slowness of their motion, they continue to live some time after their nobler parts are wounded, or even taken away. They bear the marks of all those homely-formed animals that, like rude machines, are not easily discomposed.

Its note,* according to Kircher, is an ascending and descending hexachord, which it utters only by night; its look is so piteous as to move compassion; it is also accompanied with tears, that dissuade every body from injuring so wretched a being. Its abstinence from food is remarkably powerful: one that had fastened itself by its feet to a pole, and was so suspended across two beams, remained forty days without meat, drink, or sleep; the strength of its feet is so great, that whatsoever it seizes on cannot possibly be freed from its claws. A dog was let loose at the above-mentioned animal, taken from the pole; after some time the sloth laid hold of the dog with its feet, and held him four days, till he perished with hunger.

CHAPTER XXI.

THE JERBOA.

This animal as little resembles a quadruped as that which has been described in a former chapter. If we should suppose a bird devested of its feathers, and walking upon its legs, it might give us some idea of its figure. It has four feet, indeed, but in running or resting it never makes use of any but the hinder. The number of legs, however, do not much

* Pennant's Synopsis.

contribute to any animal's speed; and the jerboa though properly speaking, furnished but with two, is one of the swiftest creatures in the world.

The jerboa is not above the size of a large rat, and its head is sloped somewhat in the manner of a rabbit; the teeth also are formed like those of the rat kind, there being two cutting teeth in each jaw; it has a very long tail tufted at the end; the head, the back and sides are covered with long ash-coloured soft hair, the breast and belly is whitish: but what most deserves our attention, in the formation of this little animal, is the legs; the fore-legs are not an inch long, with four claws and a thumb upon each, while the hinder legs are two inches and a quarter, and exactly resemble those of a bird, there being but three toes, the middlemost of which is longest.

The jerboa is found in Egypt, Barbary, Palestine, and the deserts between Bussorah and Aleppo; its hind-legs, as was said before, are only used in running while the fore-paws, like those of a squirrel, grasp its food, and in some measure perform the office of hands. It is often seen by travellers as they pass along the deserts, crossing their way, and jumping six or eight feet at every bound, and going so swiftly, that scarcely any other quadruped is able to overtake them. They are a lively, harmless race of animals, living entirely upon vegetables, and burrowing like rabbits in the ground. Mr. Pennant tells us of two that were lately brought to London, that burrowed almost through the brick wall of the room where they were kept; they came out of their hole at night for food, and when caught were much fatter and sleeker than when confined to their burrows. A variety of this animal is found also in Siberia and Circassia, and is, most probably, common enough over all Asia. They are more expert diggers than even the rabbit itself; and when pursued for a

long time, if they cannot escape by their swiftness, they try to make a hole instantly in the ground, in which they often bury themselves deep enough to find security before their pursuers come up. Their burrows, in some places, are so thick as to be dangerous to travellers, the horses perpetually falling in them. It is a provident little animal, and lays up for the winter. It cuts grass in heaps of a foot square, which, when dried, it carries into its burrow, therewith to serve it for food, and to keep its young warm during the rigours of the winter.

[THE KANGUROO.

The Kanguroo was first discovered in the year 1770, by the late Sir Joseph Banks, during one of the voyages of our celebrated navigator Captain Cook. Although it has been classed with the jerboa, on account of its hind-legs being so much longer than the fore, and also of its moving in the same bounding manner, it is now considered as more nearly allied to the oppossum, in having a pouch for the security of its young.

This animal is about the size of a sheep; it has a small head, neck and shoulders; the body increasing in thickness to the rump. The head is oblong, tapering from the eyes to the nose; the end of the nose naked and black; the upper lip divided; the nostrils are wide and open; the lower jaw is shorter than the upper; the mouth small; the eyes are large; the ears erect. There are no canine teeth, but six broad cutting teeth in the upper jaw, two long lanceolated teeth in the lower, pointing forward, and four grinding teeth in each jaw remote from the others. The belly is convex and great. The fore-

legs are very short, scarcely reaching to the nose, and useless for walking; the hind-legs are almost as long as the body, and the thighs are very thick: on the fore-feet are five toes, with long conic and strong claws; on the hind-feet only three; the middle toe is very long and thick, like that of an ostrich, the two others are placed very distinct from it, and are small; the claws are short, thick, and blunt; the bottom of the feet and hind part, black, naked, and turberculated, as the animal rests often on them. The tail is very long, extending as far as the ears; thick at the base, tapering to a point. Within the pouch of the female are two breasts, each of them furnished with two teats; and it is believed she brings forth but one at a time. When first born, the young kanguroo hardly exceeds an inch in length; and till it becomes able to shift for itself, resides entirely within the pouch of the dam, occasionally leaving it for exercise or amusement. The hair on the whole animal is soft, and of an ash colour; lightest on the lower parts.

This animal inhabits the western side of New Holland, and has as yet been discovered in no other part of the world. It lurks among the grass, and feeds on vegetables; it goes entirely on its hind-legs, making use of the fore-feet only for digging, or bringing its food to its mouth. It is very timid; at the sight of men it flies from them by amazing leaps, springing over bushes seven or eight feet high, and going progressively from rock to rock. It carries its tail quite at right angles with its body when it is in motion, and when it alights often looks back. They have been seen feeding in herds of about thirty or forty, and one is always observed to be apparently on the watch at a distance from the rest. Young kanguroos which have been taken have in a few days grown very tame, but none have lived more

than two or three weeks. Yet it is still possible, that, when their proper food shall be better known, they may be domesticated. The tail of the kanguroo, which is very large, is found to be used as a weapon of offence, and has given such severe blows to dogs as to oblige them to desist from pursuit. Its flesh is coarse and lean; nor would it probably be used for food where there was not a scarcity of fresh provisions. The pouch of the female, hitherto esteemed peculiar to the oppossum genus, has been found both in the rat and the squirrel kind in New Holland.

The Kanguroo Rat is described as similar, both in the general shape of the body and the conformation of the legs, to the kanguroo; but the visage having a strong resemblance to that of the rat, and the colour of the whole not ill resembling that animal, it has obtained the name of the kanguroo rat. It also is an inhabitant of New Holland. This species has two cutting teeth in front of the upper jaw, with three others on each side of them; and at a distance one false grinder, sharp at the edge, and fluted on the sides; and close to these two true grinders: in the lower jaw there are two long cutting teeth formed like those of the squirrel, with three grinders corresponding with those in the upper jaw. It is about the size of a rabbit.]

With these last described and last discovered animals I shall conclude the history of quadrupeds; which, of all parts of natural knowledge, seems to have been described the most accurately. As these, from their figure, as well as their sagacity, bear the nearest resemblance to man, and from their uses or enmities are the most respectable parts of the inferior creation, so it was his interest, and his pleasure, to make himself acquainted with their history.

It is probable, therefore, that time, which enlarges the sphere of our knowledge in other parts of learning, can add but very little to this. The addition of a new quadruped to the catalogue already known, is of no small consequence, and happens but seldom; for the number of all is so few, that wherever a new one is found, it becomes an object worthy our best attention. It may take refuge in its native deserts from our pursuits, but not from our curiosity.

But it is very different with the inferior ranks of the creation: the classes of birds, of fishes, and of insects, are all much more numerous, and more incompletely known. The quadruped is possessed of no arts of escaping which we are not able to overcome; but the bird removes itself by its swiftness, the fishes find protection in their native element, and insects are secured in their minuteness, numbers, and variety. Of all these, therefore, we have but a very inadequate catalogue, and though the list be already very large, yet every hour is adding to its extent.

In fact, all knowledge is pleasant only as the object of it contributes to render man happy; and the services of quadrupeds being so very necessary to him in every situation, he is particularly interested in their history. Without their aid, what a wretched and forlorn creature would he have been! The principal part of his food, his clothing, and his amusements, are derived wholly from them, and he may be considered as a great lord, sometimes cherishing his humble dependants, and sometimes terrifying the refractory, to contribute to his delight and conveniences.

The horse and the ass, the elephant, the camel, the lama, and the rein-deer, contribute to ease his fatigues, and to give him that swiftness which he wants from nature. By their assistance he changes

place without labour; he attains health without weariness; his pride is enlarged by the elegance of equipage; and other animals are pursued with a certainty of success. It were happy indeed for man, if, while converting these quadrupeds to his own benefit, he had not turned them to the destruction of his fellow-creatures: he has employed some of them for the purposes of war, and they have conformed to his noxious ambition with but too fatal an obedience.

The cow, the sheep, the deer, and all their varieties, are necessary to him, though in a different manner. Their flesh makes the principal luxuries of his table, and their wool or skins the chief ornament of his person. Even those nations that are forbid to touch any thing that has life, cannot wholly dispense with their assistance. The milk of these animals makes a principal part of the food of every country, and often repairs those constitutions that have been broken by disease or intemperance.

The dog, the cat, and the ferret, may be considered as having deserted from their fellow-quadrupeds to list themselves under the conduct and protection of man. At his command they exert all their services against such animals as they are capable of destroying, and follow them into places where he himself wants abilities to pursue.

As there is thus a numerous tribe that he has taken into protection, and that supplies his necessities and amusements, so there is also a still more numerous one that wages an unequal combat against him, and thus calls forth his courage and his industry. Were it not for the lion, the tiger, the panther, the rhinoceros, and the bear, he would scarcely know his own powers, and the superiority of human art over brutal fierceness. These serve to excite and put his nobler passions into motion. He attacks

them in their retreat, faces them with resolution, and seldom fails of coming off with a victory. He thus becomes hardier and better in the struggle, and learns to know and to value his own superiority.

As by the last mentioned animals his boldest efforts are called forth, so the numerous tribe of the smaller vermin kind excite his continual vigilance and caution; his various arts and powers have been no where more manifest, than in the extirpation of those that multiply with such prodigious fecundity. Neither their agility nor their minuteness can secure them from his pursuits, and though they may infest, they are seldom found materially to injure him.

In this manner we see, that not only human want is supplied, but that human wit is sharpened, by the humbler partners of man in the creation. By this we see, that not only their benefits, but their depredations are useful, and that it has wisely pleased Providence to place us like victors in a subdued country, where we have all the benefit of conquest, without being so secure as to run into the sloth and excesses of a certain and undisturbed possession. It appears, therefore, that those writers who are continually finding immediate benefit in every production, see but half way into the general system of nature. Experience must every hour inform us, that all animals are not formed for our use; but we may be equally well assured, that those conveniences which we want from their friendship, are well repaid by that vigilance which we procure from their enmity.

A HISTORY OF BIRDS.

PART I.

OF BIRDS IN GENERAL.

CHAPTER I.

INTRODUCTION.

We are now come to a beautiful and loquacious race of animals, that embellish our forests, amuse our walks, and exclude solitude from our most shady retirements. From these man has nothing to fear: their pleasures, their desires, and even their animosities, only serve to enliven the general picture of nature, and give harmony to meditation.

No part of nature appears destitute of inhabitants. The woods, the waters, the depths of the earth, have their respective tenants; while the yielding air, and those tracts of seeming space where man never can ascend, are also passed through by multitudes of the most beautiful beings of the creation.

Every order and rank of animals seems fitted for its situation in life, but none more apparently than birds: they share, in common with the stronger race of quadrupeds, the vegetable spoils of the earth, are supplied with swiftness to compensate for their want of force, and have a faculty of ascending into the air to avoid that power which they cannot oppose.

The bird seems formed entirely for a life of escape; and every part of the anatomy of the animal

seems calculated for swiftness. As it is designed to rise upon air, all its parts are proportionably light, and expand a large surface without solidity.

In a comparative view with man, their formation seems much ruder and more imperfect; and they are in general found incapable of the docility even of quadrupeds. Indeed, what great degree of sagacity can be expected in animals whose eyes are almost as large as their brain? However, though they fall below quadrupeds in the scale of nature, and are less imitative of human endowments, yet they hold the next rank, and far surpass fishes and insects, both in the structure of their bodies and in their sagacity.

As in mechanics the most curious instruments are generally the most complicated, so it is in anatomy. The body of man presents the greatest variety upon dissection; quadrupeds, less perfectly formed, discover their defects in the simplicity of their conformation; the mechanism of birds is still less complex; fishes are furnished with fewer organs still; while insects more imperfect than all, seem to fill up the chasm that separates animal from vegetable nature. Of man, the most perfect animal, there are but three or four species; of quadrupeds the kinds are more numerous; birds are more various still; fishes yet more; but insects afford so very great a variety, that they elude the search of the most inquisitive pursuer.

Quadrupeds, as was said, have some distant resemblance in their internal structure with man, but that of birds is entirely dissimilar. As they seem chiefly formed to inhabit the empty regions of air, all their parts are adapted to their destined situation. It will be proper, therefore, before I give a general history of birds, to enter into a slight detail of their anatomy and conformation.

As to their external parts, they seem surprisingly

adapted for swiftness of motion. The shape of their body is sharp before, to pierce and make way through the air; it then rises by a gentle swelling to its bulk, and falls off in an expansive tail, that helps to keep it buoyant, while the fore parts are cleaving the air by their sharpness. From this conformation, they have often been compared to a ship making its way through water; the trunk of the body answers to the hold, the head to the prow, the tail to the rudder, and the wings to the oars; from whence the poets have adopted the metaphor of *remigium alarum*, when they describe the wavy motion of a bird in flight.

What we are called upon next to admire in the external formation of birds is, the neat position of the feathers, lying all one way, answering at once the purposes of warmth, speed, and security. They mostly tend backward, and are laid over one another in an exact and regular order, armed with warm and soft down next the body, and more strongly fortified and curiously closed externally, to fence off the injuries of the weather. But, lest the feathers should spoil by their violent attrition against the air, or imbibe the moisture of the atmosphere, the animal is furnished with a gland behind, containing a proper quantity of oil, which can be pressed out by the bird's bill, and laid smoothly over every feather that wants to be dressed for the occasion. This gland is situated on the rump, and furnished with an opening or excretory duct; about which grows a small tuft of feathers, somewhat like a painter's pencil. When, therefore, the feathers are shattered or rumpled, the bird, turning its head backwards, with the bill catches hold of the gland, and, pressing it, forces out the oily substance, with which it anoints the disjoined parts of the feathers; and, drawing them out with great assiduity, recomposes and places them in

due order, by which they unite more closely together. Such poultry, however, as live for the most part under cover, are not furnished with so large a stock of this fluid as those birds that reside in the open air. The feathers of a hen, for instance, are pervious to every shower; on the contrary, swans, geese, ducks, and all such as nature has directed to live upon the water, have their feathers dressed with oil from the very first day of their leaving the shell. Thus their stock of fluid is equal to the necessity of its consumption. Their very flesh contracts a flavour from it, which renders it in some very rancid, so as to make it utterly unfit for food; however, though it injures the flesh, it improves the feathers for all the domestic purposes to which they are usually converted.

Nor are the feathers with which birds are covered less an object of admiration. The shaft of every feather is made proportionably strong; but hollow below for strength and lightness, and above filled with a pith to feed the growth of the vane or beard that springs from the shaft of the feather on either side. All these feathers are placed generally according to their length and strength, so that the largest and strongest feathers in flight have the greatest share of duty. The vane, or beard of the feather, is formed with equal contrivance and care. It consists not of one continued membrane, because if this were broken, it could not easily be repaired; but it is composed of many layers, each somewhat in itself resembling a feather, and lying against each other in close conjunction. Towards the shaft of the feather, these layers are broad, and of a semicircular form, to serve for strength, and for the closer grafting them one against another when in action. Towards the outer part of the vane, these layers grow slender and taper, to be more light. On

their under side they are thin and smooth, but their upper outer edge is parted into two hairy edges, each side having a different sort of hairs, broad at bottom, and slender and bearded above. By this mechanism the hooked beards of one layer always lie next the straight beards of the next, and by that means lock and hold each other.

The next object that comes under consideration in contemplating an animal that flies, is the wing, the instrument by which this wonderful progression is performed. In such birds as fly, they are usually placed at that part of the body which serves to poise the whole, and support it in a fluid that at first seems so much lighter than itself. They answer to the fore-legs in quadrupeds, and at the extremity of this they have a certain finger-like appendix, which is usually called the *bastard-wing*. This instrument of flight is furnished with quills, which differ from the common feathers only in their size, being larger, and also from their springing from the deeper part of the skin, their shafts lying almost close to the bone. The beards of these quills are broad on one side, and more narrow on the other, both which contribute to the progressive motion of the bird and the closeness of the wing. The manner in which most birds avail themselves of these is first thus: they quit the earth with a bound, in order to have room for flapping with the wing; when they have room for this, they strike the body of air beneath the wing with a violent motion, and with the whole under surface of the same; but then, to avoid striking the air with equal violence on the upper side as they rise, the wing is instantly contracted; so that the animal rises by the impulse till it spreads the wing for a second blow. For this reason, we always see birds choose to rise against the wind, because they have thus a greater body of air on the under than the up-

per side of the wing. For these reasons also, large fowls do not rise easily, both because they have not sufficient room at first for the motion of their wings, and because the body of air does not lie so directly under the wing as they rise.

In order to move the wings, all birds are furnished with two very strong pectoral muscles, which lie on each side of the breast-bone. The pectoral muscles of quadrupeds are trifling in comparison to those of birds. In quadrupeds, as well as in man, the muscles which move the thighs and hinder parts of the body are by far the strongest, while those of the arms are feeble; but in birds, which make use of their wings, the contrary obtains; the pectoral muscles that move the wings or arms are of enormous strength, while those of the thighs are weak and slender. By means of these, a bird can move its wings with a degree of strength, which when compared to the animal's size, is almost incredible. The flap of a swan's wing would break a man's leg; and a similar blow from an eagle has been known to lay a man dead in an instant. Such, consequently, is the force of the wing, and such its lightness, as to be inimitable by art. No machines that human skill can contrive are capable of giving such force to so light an apparatus. The art of flying, therefore, that has so often and so fruitlessly been sought after, must, it is feared, for ever be unattainable; since as man increases the force of his flying machine, he must be obliged to increase its weight also.

In all birds, except nocturnal ones, the head is smaller, and bears less proportion to the body than in quadrupeds, that it may more readily divide the air in flying, and make way for the body, so as to render its passage more easy. Their eyes also are more flat and depressed than in quadrupeds; a circle of small plates of bones, placed scalewise, under

the outer coat of the organ, encompasses the pupil on each, to strengthen and defend it from injuries, Beside this, birds have a kind of skin, called the nictitating membrane, with which, like a veil, they can at pleasure cover their eyes, though there eyelids continue open. This membrane takes its rise from the greater or more obtuse corner of the eye, and serves to wipe, cleanse, and probably to moisten its surface. The eyes, though they outwardly appear but small, yet, separately, each almost equals the brain; whereas in man the brain is more than twenty times larger than the orbit of the eye. Nor is this organ in birds less adapted for vision by a particular expansion of the optic nerve, which renders the impressions of external objects more vivid and distinct.

From this conformation of the eye it follows, that the sense of seeing in birds is infinitely superior to that of other animals. Indeed, this piercing sight seems necessary to the creature's support and safety. Were this organ blunter, from the rapidity of the bird's motion it would be apt to strike against every object in its way; and it could scarcely find subsistence unless possessed of a power to discern its food from above with astonishing sagacity. A hawk, for instance, perceives a lark at a distance which neither men nor dogs could spy; a kite, from an almost imperceptible height in the clouds, darts down on its prey with the most unerring aim. The sight of birds, therefore, exceeds what we know in most other animals, and excels them both in strength and precision.

All birds want the external ear standing out from the head; they are only furnished with holes that convey sounds to the auditory canal. It is true, indeed, that the horned owl, and one or two more birds, seem to have external ears; but what bears

that resemblance are only feathers sticking out on each side of the head, but no way necessary to the sense of hearing. It is probable, however, that the feathers encompassing the ear-holes in birds supply the defect of the exterior ear, and collect sounds to be transmitted to the internal sensory. The extreme delicacy of this organ is easily proved by the readiness with which birds learn tunes, or repeat words, and the great exactness of their pronunciation.

The sense of smelling seems not less vivid in the generality of birds. Many of them *wind* their prey at an immense distance, while others are equally protected by this sense against their insidious pursuers. In decoys, where ducks are caught, the men who attend them universally keep a piece of turf burning near their mouths, upon which they breathe, lest the fowl should smell them, and consequently fly away. The universality of this practice puts the necessity of it beyond a doubt, and proves the extreme delicacy of the sense of smelling, at least in this species of the feathered creation.

Next to the parts for flight, let us view the legs and feet ministering to motion. They are both made light, for the easier transportation through the air. The toes in some are webbed, to fit them for the waters; in others they are separate, for the better holding objects, or clinging to trees for safety. Such as have long legs have also long necks, as otherwise they would be incapable of gathering up their food, either by land or water. But it does not hold, however, that those which have long necks should have long legs, since we see that swans and geese, whose necks are extremely long, have very short legs, and these chiefly employed in swimming.

Thus every external part hitherto noticed, appears adapted to the life and situation of the animal; nor are the inward parts, though less immediately ap-

propriated to flight, less necessary to safety. The bones of every part of the body are extremely light and thin; and all the muscles, except that immediately moving the wings, extremely slight and feeble. The tail, which is composed of quill feathers, serves to counterbalance the head and neck; it guides the animal's flight like a rudder, and greatly assists it either in its ascent or when descending.

If we go on to examine birds internally, we shall find the same wonderful conformation fitting them for a life in air, and increasing the surface by diminishing the solidity. In the first place, their lungs, which are commonly called the *sole*, stick fast to the sides of the ribs and back, and can be very little dilated or contracted. But to make up for this, which might impede their breathing, the ends of the branches of the wind-pipe open into them, while these have openings into the cavity of the belly, and convey the air drawn in by breathing into certain receptacles like bladders, running along the length of the whole body. Nor are these openings obscure or difficult to be discerned; for a probe thrust into the lungs of a fowl will easily find a passage into the belly; and air blown into the wind-pipe will be seen to distend the animal's body like a bladder. In quadrupeds this passage is stopped by the midriff; but in fowls the communication is obvious; and consequently they have a much greater facility of taking a long and large inspiration. It is sometimes also seen that the wind-pipe makes many convolutions within the body of the bird, and it is then called the *labyrinth;* but of what use these convolutions are, or why the wind-pipe should make so many turnings within the body of some birds, is a difficulty for which no naturalist has been able to account.

This difference of the wind-pipe often obtains in animals that to all appearance are of the same spe-

cies. Thus in the tame swan, the wind-pipe makes but a straight passage into the lungs; while in the wild swan, which to all external appearance seems the same animal, the wind-pipe pierces through the breast-bone, and there has several turnings, before it comes out again and goes to enter the lungs. It is not to form the voice that these turnings are found, since the fowls that are without them are vocal, and those, particularly the bird just now mentioned, that have them, are silent. Whence, therefore, some birds derive that loud and various modulation in their warblings, is not easily to be accounted for; at least, the knife of the anatomist goes but a short way in the investigation. All we are certain of is, that birds have much louder voices, in respect to their bulk, than animals of any other kind; for the bellowing of an ox is not louder than the scream of a peacock.

In these particulars birds pretty much resemble each other in their internal conformation; but there are some varieties which we should more attentively observe. All birds have, properly speaking, but one stomach; but this is very different in different kinds. In all the rapacious kinds that live upon animal food, as well as in some of the fish-feeding tribe, the stomach is peculiarly formed. The œsophagus, or gullet, in them is found replete with glandulous bodies, which serve to dilate and macerate the food as it passes into the stomach, which is always very large in proportion to the size of the bird, and generally wrapped round with fat, in order to increase its warmth and powers of digestion.

Granivorous birds, or such as live upon fruits, corn, and other vegetables, have their intestines differently formed from those of the rapacious kind. Their gullet dilates just above the breast-bone, and forms itself into a pouch or bag, called the crop.

This is replete with salivary glands, which serve to moisten and soften the grain and other food which it contains. These glands are very numerous, with longitudinal openings, which emit a whitish and a viscous substance. After the dry food of the bird has been macerated for a convenient time, it then passes into the belly, where, instead of a soft moist stomach, as in the rapacious kind, it is ground between two pair of muscles, commonly called the gizzard, covered on the inside with a stony ridgy coat, and almost cartilaginous. These coats rubbing against each other, are capable of bruising and attenuating the hardest substances, their action being often compared to that of the grinding teeth in man and other animals. Thus the organs of digestion are in a manner reversed in birds. Beasts grind their food with their teeth, and then it passes into the stomach, where it is softened and digested. On the contrary, birds of this sort first macerate and soften it in the crop, and then it is ground and comminuted in the stomach or gizzard. Birds are also careful to pick up sand, gravel, and other hard substances, not to grind their food, as has been supposed, but to prevent the too violent action of the coats of the stomach against each other.

Most birds have two appendices, or blind guts, which in quadrupeds are always found single. Among such birds as are thus supplied, all carnivorous fowl, and all birds of the sparrow kind, have very small and short ones; water-fowl, and birds of the poultry kind, the longest of all. There is still another appendix observable in the intestines of birds, resembling a little worm, which is nothing more than the remainder of that passage by which the yolk was conveyed into the guts of the young chicken while yet in the egg and under incubation

The outlet of that duct which conveys the bile

into the intestines is, in most birds, a great way distant from the stomach; which may arise from the danger there would be of the bile regurgitating into the stomach in their various rapid motions, as we see in men at sea; wherefore their biliary duct is so contrived, that this regurgitation cannot take place.

All birds, though they want a bladder for urine, have large kidneys and ureters, by which this secretion is made, and carried away by one common canal. "Birds," says Harvey, "as well as serpents, which have spongy lungs, make but little water, because they drink but little. They, therefore, have no need of a bladder; but their urine distils down into the common canal, designed for receiving the other excrements of the body. The urine of birds differs from that of other animals; for as there is usually in urine two parts, one more serous and liquid, the other more thick and gross, which subsides to the bottom, in birds the last part is most abundant, and is distinguished from the rest by its white or silver colour. This part is found not only in the whole intestinal canal, but is seen also in the whole channel of the ureters, which may be distinguished from the coats of the kidneys by their whiteness. This milky substance they have in greater plenty than the more thin and serous part; and it is of a middle consistence, between limpid urine and the grosser parts of the fæces. In passing through the ureters, it resembles milk curdled or lightly condensed; and being cast forth easily, congeals into a chalky crust."

From this simple conformation of the animal, it should seem that birds are subject to few diseases; and in fact they have but few. There is one, however, which they are subject to, from which quadrupeds are in a great measure exempt: this is the annual moulting which they suffer; for all birds

whatsoever obtain a new covering of feathers once a-year, and cast the old. During the moulting season, they ever appear disordered; those most remarkable for their courage then lose all their fierceness, and such as are of a weakly constitution often expire under this natural operation. No feeding can maintain their strength; they all cease to breed at this season; that nourishment which goes to the production of the young, is wholly absorbed by the demand required for supplying the nascent plumage.

This moulting time, however, may be artificially accelerated, and those who have the management of singing birds frequently put their secret in practice. They enclose the bird in a dark cage, where they keep it excessively warm, and throw the poor little animal into an artificial fever: this produces the moult; his old feathers fall before their time, and a new set take place, more brilliant and beautiful than the former. They add, that it mends the bird's singing, and increases its vivacity; but it must not be concealed, that scarcely one bird in three survives the operation.

The manner in which nature performs this operation of moulting is thus: the quill or feather, when first protruded from the skin and come to its full size, grows harder as it grows older, and receives a kind of periosteum or skin round the shaft, by which it seems attached to the animal. In proportion as the quill grows older, its sides, or the bony pen part, thicken, but its whole diameter shrinks and decreases. Thus, by the thickening of its sides, all nourishment from the body becomes more sparing; and, by the decrease of its diameter, it becomes more loosely fixed in its socket, till at length it falls out. In the mean time, the rudiments of an incipient quill are beginning below. The skin forms itself into a little bag, which is fed from the body by a small vein

and artery, and which every day increases in size till it is protruded. While the one end vegetates into the beard or vane of the feather, that part attached to the skin is still soft, and receives a constant supply of nourishment, which is diffused through the body of the quill by that little light substance which we always find within when we make a pen. This substance, which as yet has received no name that I know of, serves the growing quill as the umbilical artery does an infant in the womb, by supplying it with nourishment, and diffusing that nourishment over the whole frame. When, however, the quill is come to its full growth, and requires no further nourishment, the vein and artery become less and less, till at last the little opening by which they communicated with the quill becomes wholly obliterated; and the quill thus deprived continues in its socket for some months, till in the end it shrinks, and leaves room for a repetition of the same process of nature as before.

The moulting season commonly obtains from the end of summer to the middle of autumn. The bird continues to struggle with this malady during the winter; and nature has kindly provided, that when there are the fewest provisions, that then the animal's appetite shall be least craving. At the beginning of spring, when food begins again to be plentiful, the animal's strength and vigour return. It is then that the abundance of provisions, aided by the mildness of the season, incite it to love, and all nature seems teeming with life, and disposed to continue it.

CHAPTER II.

OF THE GENERATION, NESTLING, AND INCUBATION OF BIRDS.

THE return of spring is the beginning of pleasure. Those vital spirits which seemed locked up during the winter, then begin to expand; vegetables and insects supply abundance of food; and the bird having more than a sufficiency for its own subsistence, is impelled to transfuse life as well as to maintain it. Those warblings which had been hushed during the colder seasons, now begin to animate the fields; every grove and bush resounds with the challenge of anger, or the call of allurement. This delightful concert of the grove, which is so much admired by man, is no way studied for his amusement; it is usually the call of the male to the female, his efforts to soothe her during the times of incubation; or it is a challenge between two males for the affections of some common favourite.

It is by this call that birds begin to pair at the approach of spring, and provide for the support of a future progeny. The loudest notes are usually from the male; while the hen seldom expresses her consent, but in a short interrupted twittering. This compact, at least for the season, holds with unbroken faith; many birds live with inviolable fidelity together for a constancy; and when one dies, the other is always seen to share the same fate soon after. We must not take our idea of the conjugal fidelity of birds from observing the poultry in our yards, whose freedom is abridged, and whose manners are totally corrupted by slavery. We must look for it in our fields and our forests, where nature continues in unadulterated simplicity, where the number of males

is generally equal to that of females, and where every little animal seems prouder of his progeny than pleased with his mate. Were it possible to compare sensations, the male of all wild birds seems as happy in the young brood as the female; and all his former caresses, all his soothing melodies, seem only aimed at that important occasion when they are both to become parents, and to educate a progeny of their own producing. The pleasures of love appear dull in their effects, when compared to the interval immediately after the exclusion of their young. They both seem, at that season, transported with pleasure; every action testifies their pride, their importance, and tender solicitude.

When the business of fecundation is performed, the female then begins to lay. Such eggs as have been impregnated by the cock are prolific; and such as have not (for she lays often without any congress whatsoever,) continue barren, and are only addled by incubation. Previous, however, to laying, the work of nestling becomes the common care; and this is performed with no small degree of assiduity and apparent design. It has been asserted, that birds of one kind always make their nests in the same manner, and of the same materials; but the truth is, that they vary this as the materials, places, or climates happen to differ. The red-breast, in some parts of England, makes its nest with oak leaves, where they are in greatest plenty, in other parts with moss and hair. Some birds that with us make a very warm nest, are less solicitous in the tropical climates, where the heat of the weather promotes the business of incubation. In general, however, every species of birds has a peculiar architecture of its own; and this adapted to the number of eggs, the temperature of the climate, or the respective heat of the little animal's own body. Where the

eggs are numerous, it is then incumbent to make the nest warm, that the animal heat may be equally diffused to them all. Thus the wren, and all the small birds, make the nest very warm; for having many eggs, it is requisite to distribute warmth to them in common: on the contrary, the plover, that has but two eggs, the eagle, and the crow, are not so solicitous in this respect, as their bodies are capable of being applied to the small number upon which they sit. With regard to climate, water-fowl, that with us make but a very slovenly nest, are much more exact in this particular in the colder regions of the north. They there take every precaution to make it warm; and some kinds strip the down from their breasts to line it with greater security.

In general, however, every bird resorts to hatch in those climates or places where its food is found in greatest plenty, and always at that season when provisions are in the greatest abundance. The large birds, and those of the aquatic kinds, choose places as remote from man as possible, as their food is in general different from that which is cultivated by human labour. Some birds, which have only the serpent to fear, build their nests depending from the end of a small bough, and form the entrance from below, being thus secured either from the serpent or the monkey tribes. But all the little birds which live upon fruits and corn, and that are too often unwelcome intruders upon the fruits of human industry, in making their nests use every precaution to conceal them from man. On the other hand, the great birds, remote from human society, use every precaution to render theirs inaccessible to wild beasts or vermin.

Nothing can exceed the patience of birds while hatching; neither the calls of hunger, nor the near approach of danger; can drive them from the nest.

They are often fat upon beginning to sit, yet before incubation is over the female is usually wasted to skin and bone. Ravens and crows, while the females are sitting, take care to provide them with food, and this in great abundance. But it is different with most of the smaller kinds: during the whole time, the male sits near his mate upon some tree, and soothes her by his singing; and often when she is tired takes her place, and patiently continues upon the nest till she returns. Sometimes, however, the eggs acquire a degree of heat too much for the purposes of hatching; in such cases the hen leaves them to cool a little, and then returns to sit with her usual perseverance and pleasure.

So great is the power of instinct in animals of this class, that they seem driven from one appetite to another, and continue almost passive under its influence. Reason we cannot call it, since the first dictates of that principle would be self-preservation: "Take a brute," says Addison, "out of his instinct, and you find him wholly deprived of understanding. With what caution," continues he, "does the hen provide herself a nest in places unfrequented, and free from noise and disturbance! When she has laid her eggs in such a manner that she can cover them, what care does she take in turning them frequently, that all parts may partake of the vital warmth! When she leaves them, to provide for her necessary sustenance, how punctually does she return before they have time to cool, and become incapable of producing an animal! In the summer you see her giving herself greater freedoms, and quitting her care for above two hours together; but in winter, when the rigour of the season would chill the principles of life, and destroy the young one, she grows more assiduous in her attendance, and stays away but half the time. When the birth approach-

es, with how much nicety and attention does she help the chick to break the prison! not to take notice of her covering it from the injuries of the weather, providing it with proper nourishment, and teaching it to help itself; nor to mention her forsaking the nest, if, after the usual time of reckoning, the young one does not make its appearance. A chemical operation could not be followed with greater art or diligence than is seen in hatching a chick, though there are many birds that show an infinitely greater sagacity; yet at the same time the hen, that has all this seeming ingenuity, which is indeed absolutely necessary for the propagation of the species, considered in other respects, is without the least glimmerings of thought or common sense: she mistakes a piece of chalk for an egg, and sits upon it in the same manner; she is insensible of any increase or diminution in the number of those she lays; she does not distinguish between her own and those of another species; and when the birth appears of never so different a bird, will cherish it for her own. A hen followed by a brood of ducks, shall stand affrighted at the edge of a pond, trembling for the fate of her young, which she sees venturing into so dangerous an element. As the different principle which acts in these different animals cannot be termed reason, so, when we call it instinct, we mean something we have no knowledge of. It appears to me the immediate direction of Providence; and such an operation of the Supreme Being as that which determines all the portions of matter to their proper centres."

The production of the young, as was said, seems to be the great era of a bird's happiness. Nothing can at that time exceed its spirit and industry; the most timid becomes courageous in the defence of its young. Birds of the rapacious kind, at this season, become more than usually fierce and active. They

carry their prey, yet throbbing with life, to the nest, and early accustom their young to habits of slaughter and cruelty. Nor are those of milder natures less busily employed; the little birds then discontinue their singing, taken up with more important pursuits of common subsistence.

While the young are yet unfledged, and continue in the nest, the old ones take care to provide them with a regular supply, and, lest one should take all nourishment from the rest, they feed each of the young in their turn. If they perceive that man has been busy with their nest, or has handled the little ones, they abandon the place by night, and provide their brood a more secure, though less commodious retreat. When the whole family is completely plumed, and capable of avoiding danger by flight, they are then led forth when the weather is fine, and taught the paternal art of providing for their subsistence. They are led to the places where their food lies; they are shown the method of discovering or carrying it away, and then led back to the nest for a day or two longer. At length, when they are completely qualified to shift for themselves, the old ones take them abroad, and leading them to the accustomed places, forsake them for the last time, and all future connexion is for ever at an end.

Those birds which are hatched and sent out earliest in the season, are the most strong and vigorous; those, on the other hand, that have been delayed till the midst of summer, are more feeble and tender, and sometimes incapable of sustaining the rigours of the ensuing winter. Birds themselves seem sensible of this difference, and endeavour to produce early in the spring. If, however, their efforts are obstructed by having their nests robbed, or some similar accident, they still persevere in their efforts for a progeny; and it often happens that some are thus retard-

ed till the midst of winter. What number of eggs any bird can lay in the course of a season, is not ascertained; but this is true, that such as would have laid but two or three at the most, if their nests be robbed, or their eggs stolen, will lay above ten or twelve. A common hen if moderately fed, will lay above a hundred from the beginning of spring to the latter end of autumn. In general, however, it obtains, that the smallest and weakest animals are the most prolific, while the strong and rapacious are abridged by sterility. Thus such kinds as are easily destroyed, are as readily repaired; and nature, where she has denied the power of resistance, has compensated by the fertility attending procreation.

Birds in general, though they have so much to fear from man and each other, are seldom scared away from their usual haunts. Although they be so perfectly formed for a wandering life, and are supplied with powers to satisfy all their appetites though never so remote from the object, though they are so well fitted for changing place with ease and rapidity, yet the greatest number remain contented in the districts where they have been bred, and by no means exert their desires in proportion to their endowments. The rook, if undisturbed, never desires to leave his native grove; the black-bird still frequents its accustomed hedge; and the red-breast, though seemingly mild, claims a certain district, from whence he seldom moves, but drives out every one of the same species from thence without pity. They are excited to migration by no other motives but those of fear, climate, or hunger. It must be from one of these powerful motives that the birds, which are called *birds of passage*, every year forsake us for some time, and make their regular and expected return.

Nothing has more employed the curiosity of mankind than these annual emigrations, and yet few sub-

jects continue so much involved in darkness. It is generally believed, that the cause of their retreat from these parts of Europe is either a scarcity of food at certain seasons, or the want of a secure asylum from the persecution of man during the time of courtship and bringing up their young. Thus the starling, in Sweden, at the approach of winter, finding subsistence no longer in that kingdom, descends every year into Germany; and the hen chaffinches of the same country are seen every year to fly through Holland in large flocks, to pass their winter in a milder climate. Others, with a more daring spirit, prepare for journeys that might intimidate even human perseverance. Thus the quails in spring forsake the burning heats of Africa for the milder sun of Europe; and, when they have passed the summer with us, steer their flight back to enjoy in Egypt the temperate air, which then begins to be delightful. This with them seems a preconcerted undertaking. They unite together in some open place for some days before their departure, and, by an odd kind of chattering, seem to debate on the method to proceed. When their plan is resolved upon, they all take flight together, and often appear in such numbers, that, to mariners at sea, they seem like a cloud that rests upon the horizon. The boldest, strongest, and by far the greatest number, make good their intention; but many there are who, not well apprized of their own force for the undertaking, grow weary in the way, and, quite spent by the fatigues of their flight, drop down into the sea, and sometimes upon deck, thus becoming an easy prey to the mariner.

Of the vast quantity of water-fowl that frequent our shores, it is amazing to reflect how few are known to breed here. The cause that principally urges them to leave this country seems to be, not merely the want of food, but the desire of a secure

retreat. Our country is too populous for birds so shy and timid as the greatest number of these are. When great part of our island was a mere waste, an uncultivated tract of woods and marshes, many species of birds which now migrate remained with us throughout the year. The great heron and the crane, that have now forsaken this country, in former times bred familiarly in our marshes, and seemed to animate our fens. Their nests, like those of most cloven-footed water-fowl, were built on the ground, and exposed to every invader. But as rural economy increased, these animals were more and more disturbed. Before they had little to fear, as the surrounding marsh defended them from all the carnivorous quadrupeds, and their own strength from birds of prey; but upon the intrusion of man, and by a long series of alarms, they have at length been obliged to seek, during the summer, some lonely habitation at a safe distance from every destroyer.

Of the numerous tribes of the duck kind we know of no more than five that breed here; the tame swan, the tame goose, the sheldrake, the eider duck, and a few of the wild ducks. The rest contribute to form that amazing multitude of water-fowl which annually repair to the dreary lakes and deserts of Lapland from the more southern countries of Europe. In those extensive and solitary retreats they perform the duties of incubation and nutrition in full security. There are few of this kind that may not be traced to the northern deserts; to countries of lakes, rivers, swamps, and mountains, covered with thick and gloomy forests, that afford shelter during summer to the timid animals who live there in undisturbed security. In those regions, from the thickness of the forests, the ground remains moist and penetrable during the summer season; the woodcock, the snipe, and other slender-billed birds, can there

feed at ease; while the web-footed birds find more than sufficient plenty of food from the number of insects which swarm there to an incredible degree. The days there are long, and the beautiful meteorous nights afford them opportunities of collecting so minute a food, which is probably of all others the most grateful. We are not to be astonished, therefore, at the amazing numbers of fowl that descend from these regions at the approach of winter; numbers, to which the army of Xerxes was but trifling in comparison, and which Linnæus has observed for eight whole days and nights to cover the surface of the river Calix.

This migration from the north usually begins in September, when they quit their retreats, and disperse themselves over all the southern parts of Europe. It is not unpleasing to observe the order of their flight; they generally range themselves in a long line, or they sometimes make their march angularly, two lines uniting in the centre like the letter V reversed. The bird which leads at the point seems to cleave the air, to facilitate the passage for those which are to follow. When fatigued with this laborious station, it falls back into one of the wings of the file, while another takes its place. With us they make their appearance about the beginning of October, circulate first round our shores, and when compelled by severe frost, betake themselves to our lakes and rivers. Some, indeed, of the web-footed fowl, of hardier constitutions than the rest, abide the rigours of their northern climate the whole winter; but when the cold reigns there with more than usual severity, they are obliged to seek for more southern skies: they then repair with the rest for shelter to these kingdoms; so that the diver, the wild swan, and the swallow-tailed sheldrake, visit our coasts but seldom, and that only when compelled by the severity of their winters at home.

It has been often a subject of astonishment, how animals to all appearance so dull and irrational should perform such long journeys; should know whither to steer, and when to set out upon such a great undertaking. It is probable that the same instinct which governs all their other actions, operates also here. They rather follow the weather than the country; they steer only from colder or warmer climates into those of an opposite nature, and finding the variations of the air as they proceed in their favour, go on till they find land to repose on. It cannot be supposed that they have any memory of the country where they might have spent a former winter; it cannot be supposed that they see the country to which they travel from their height in the air, since, though they mounted for miles, the convexity of the globe would intercept their view; it must therefore only be, that they go on as they continue to perceive the atmosphere more suitable to their present wants and dispositions.

All this seems to be pretty plain; but there is a circumstance attending the migration of swallows which wraps this subject in great obscurity. It is agreed on all hands, that they are seen migrating into warmer climates, and that in amazing numbers at the approach of the European winter; their return into Europe is also as well attested about the beginning of summer. But we have another account, which serves to prove that numbers of them continue torpid here during the winter, and, like bats, make their retreat into old walls, the hollows of trees, or even sink into the deepest lakes, and find security for the winter season by remaining there in clusters at the bottom. However this latter circumstance may be, their retreat into old walls is too well authenticated to remain a doubt at present. The difficulty, therefore, is to account for this difference in

these animals thus variously preparing to encounter the winter. It was supposed that in some of them the blood might lose its motion by the cold, and that thus they were rendered torpid by the severity of the season; but M. Buffon having placed many of this tribe in an ice-house, found that the same cold by which their blood was congealed was fatal to the animal: it remains, therefore, a doubt to this hour, whether there may not be a species of swallows, to all external appearance like the rest, but differently formed within, so as to fit them for a state of insensibility during the winter here. It was suggested, indeed, that the swallows found thus torpid were such only as were too weak to undertake the migration, or were hatched too late to join the general convoy; but it was upon these that M. Buffon tried his experiment; it was these that died under the operation.

Thus there are some birds which by migrating make a habitation of every part of the earth; but in general every climate has birds peculiar to itself. The feathered inhabitants of the temperate zone are but little remarkable for the beauty of their plumage; but then the smaller kinds make up for this defect by the melody of their voices. The birds of the torrid zone are very bright and vivid in their colours, but they have screaming voices, or are totally silent. The frigid zone, on the other hand, where the seas abound with fish, are stocked with birds of the aquatic kind in much greater plenty than in Europe; and these are generally clothed with a warmer coat of feathers, or they have large quantities of fat lying underneath the skin, which serves to defend them from the rigours of the climate.

In all countries, however, birds are a more long-lived class of animals than the quadrupeds or insects of the same climate. The life of man himself

is but short when compared to what some of them enjoy. It is said that swans have been known to live three hundred years; geese are often seen to live fourscore; while linnets, and other little birds, though imprisoned in cages, are often found to reach fourteen or fifteen. How birds, whose age of perfection is much more early than that of quadrupeds, should yet live comparatively so much longer, is not easily to be accounted for; perhaps, as their bones are slighter and more porous than those of quadrupeds, there are fewer obstructions in the animal machine; and nature thus finding more room for the operations of life, it is carried on to a greater extent.

All birds in general are less than quadrupeds; that is, the greatest of one class far surpass the greatest of the other in magnitude. The ostrich, which is the greatest of birds, bears no proportion to the elephant; and the smallest humming-bird, which is the least of the class, is still far more minute than the mouse. In these the extremities of nature are plainly discernible; and in forming them she appears to have been doubtful in her operations: the ostrich, seemingly covered with hair, and incapable of flight, making near approaches to the quadruped class; while the humming-bird, of the size of an humble-bee, and with a fluttering motion, seems nearly allied to the insect.

These extremities of this class are rather objects of human curiosity than utility—it is the middle order of birds which man has taken care to propagate and maintain. Of those which he has taken under his protection, and which administer to his pleasures or necessities, the greatest number seem creatures of his formation. The variety of climate to which he consigns them, the food with which he supplies them, and the purposes for which he employs them, produce amazing varieties, both in their colours,

shape, magnitude, and the taste of their flesh. Wild birds are, for the most part, of the same magnitude and shape; they still keep the prints of primeval nature strong upon them; except in a few they generally maintain their very colour: but it is otherwise with domestic animals; they change at the will of man—of the tame pigeon, for instance, it is said that they can be bred to a feather.

As we are thus capable of influencing their form and colour, so also is it frequent to see equal instances of our influencing their habitudes, appetites, and passions. The cock, for instance, is artificially formed into that courage and activity which he is seen to possess; and many birds testify a strong attachment to the hand that feeds them: how far they are capable of instruction, is manifest to those who have the care of hawks. But a still more surprising instance of this was seen some time ago in London: a canary bird was taught to pick up the letters of the alphabet, at the word of command, so as to spell any person's name in company; and this the little animal did by motions from its master, which were imperceptible to every other spectator. Upon the whole, however, they are inferior to quadrupeds in docility, and seem more mechanically impelled by all the power of instinct.

CHAPTER III.

OF THE DIVISION OF BIRDS.

Though birds are fitted for sporting in air, yet as they find their food upon the surface of the earth, there seems a variety equal to the different aliments with which it tends to supply them. The flat and

fat and muscular, and their flesh white and pure. They live upon grain, which is moistened in the crop. They make their nest on the ground, without art; they lay many eggs; and use promiscuous venery.

Birds of the *sparrow kind* comprehend all that beautiful and vocal class that adorn our fields and groves, and gratify every sense in its turn. Their bills may be compared to a forceps that catches hold; their legs are formed for hopping along; their bodies are tender; pure in such as feed upon grain, impure in such as live upon insects. They live chiefly in trees; their nests are artificially made, and their amours are observed with connubial fidelity.

Birds of the *duck kind* use their bills as a kind of strainer to their food; it is smooth, covered with a skin, and nervous at the point. Their legs are short, and their feet formed for swimming, the toes being webbed together. Their body is fat, inclined to rancidity. They live in waters, and chiefly build their nests upon land.

With respect to the order of birds that belong to the waters, those of the *crane kind* have the bill formed for the purposes of searching and examining the bottom of pools: their legs are long and formed for wading; their toes are not webbed; their thighs are half naked; their body is slender and covered with a very thin skin; their tail is short, and their flesh savoury. They live in lakes upon animals, and they chiefly build their nests upon the ground.

Such is the division of Linnæus with respect to this class of animals, and at first sight it appears natural and comprehensive. But we must not be deceived by appearances: the student who should imagine he was making a progress in the history of nature, while he was only thus making arbitrary distributions, would be very much mistaken. Should

he come to enter deeper into this naturalist's plan, he would find birds the most unlike in nature thrown together into the same class; and find animals joined that entirely differ in climate, in habitudes, in manners, in shape, colouring, and size. In such a distribution, for instance, he would find the humming-bird and the raven, the rail and the ostrich, joined in the same family. If when he asked what sort of a creature was the humming-bird, he were told that it was in the same class with the carrion crow, would he not think himself imposed upon? In such a case, the only way to form any idea of the animal whose history he desires to know, is to see it, and that curiosity very few have an opportunity of gratifying. The number of birds is so great, that it might exhaust the patience not only of the writer, but the reader, to examine them all: in the present confined undertaking it would certainly be impossible. I will, therefore, now attach myself to a more natural method; and still keeping the general division of Linnæus before me, enter into some description of the most noted, or the most worth knowing.

Under one or other class, as I shall treat them, the reader will probably find all the species, and all the varieties that demand his curiosity. When the leader of any tribe is described, and its history known, it will give a very tolerable idea of all the species contained under it. It is true, the reader will not thus have his knowledge ranged under such precise distinctions; nor can he be able to say, with such fluency, that the rail is of the ostrich class; but, what is much more material, he will have a tolerable history of the bird he desires to know, or at least of that which most resembles it in nature.

However, it may be proper to apprize the reader, that he will not here find his curiosity satisfied, as in the former volumes, where we often took M. Buf-

fon for our guide. Those who have hitherto written the natural history of birds, have in general been contented with telling their names, or describing their toes or their plumage. It must often therefore happen, that instead of giving the history of a bird, we must be content to entertain the reader with merely its description. I will therefore divide the following history of birds, with Linnæus, into six parts: in the first of which I will give such as Brisson has ranged among the rapacious birds; next, those of the pie kind; and thus go on through the succeeding classes, till I finish with those of the duck kind. But before I enter upon a systematic detail, I will beg leave to give the history of three or four birds that do not well range in any system. These, from their great size, are sufficiently distinguishable from the rest; and, from their incapacity of flying, lead a life a good deal differing from the rest of the feathered creation. The birds I mean are the Ostrich, the Cassowary, the Emu, the Dodo, and the Solitaire.

CHAPTER IV.

THE OSTRICH.

In beginning with the feathered tribe, the first animal that offers seems to unite the class of quadrupeds and of birds in itself. While it has the general outline and properties of a bird, yet it retains many of the marks of the quadruped. In appearance the ostrich resembles the camel, and is almost as tall; it is covered with a plumage that resembles hair much more nearly than feathers, and its internal parts bear as near a similitude to those of the

1. Ostrich — 2. Dodo — 3. Cassowary.

quadruped as of the bird creation. It may be considered, therefore, as an animal made to fill up that chasm in nature which separates one class of beings from another.

The ostrich is the largest of all birds. Travellers affirm that they are seen as tall as a man on horseback; and even some of those that have been brought into England were above seven feet high. The head and bill somewhat resemble those of a duck; and the neck may be likened to that of a swan, but that it is much longer; the legs and thighs resemble those of a hen; though the whole appearance bears a strong resemblance to that of a camel. But to be more particular: it is usually seven feet high from the top of the head to the ground; but from the back it is only four; so that the head and neck are above three feet long. From the top of the head to the rump, when the neck is stretched out in a right line, it is six feet long, and the tail is about a foot more. One of the wings, without the feathers, is a foot and a half; and being stretched out, with the feathers, is three feet.

The plumage is much alike in all; that is, generally black and white, though some of them are said to be gray. The greatest feathers are at the extremities of the wings and tail, and the largest are generally white. The next row is black and white; and of the small feathers on the back and belly, some are white and others black. There are no feathers on the sides, nor yet on the thighs, nor under the wings. The lower part of the neck, about half way, is covered with still smaller feathers than those on the belly and back; and those, like the former, also, are of different colours.

All these feathers are of the same kind, and peculiar to the ostrich; for other birds have several sorts, some of which are soft and downy, and others hard and strong. Ostrich feathers are almost all as

soft as down, being utterly unfit to serve the animal for flying, and still less adapted to be a proper defence against external injury. The feathers of other birds have the webs broader on one side than the other, but those of the ostrich have their shaft exactly in the middle. The upper part of the head and neck are covered with a very fine clear white hair, that shines like the bristles of a hog; and in some places there are small tufts of it, consisting of above twelve hairs, which grow from a single shaft about the thickness of a pin.

At the end of each wing there is a kind of spur almost like the quill of a porcupine. It is an inch long, being hollow and of a horny substance. There are two of these on each wing, the largest of which is at the extremity of the bone of the wing, and the other a foot lower. The neck seems to be more slender in proportion to that of other birds, from its not being furnished with feathers. The skin in this part is of a livid flesh colour, which some improperly would have to be blue. The bill is short and pointed, and two inches and a half at the beginning. The external form of the eye is like that of a man, the upper eye-lid being adorned with eye-lashes, which are longer than those on the lid below. The tongue is small, very short, and composed of cartilages, ligaments, and membranes, intermixed with fleshy fibres. In some it is about an inch long, and very thick at the bottom. In others it is but half an inch, being a little forked at the end.

The thighs are very fleshy and large, being covered with a white skin, inclining to redness, and wrinkled in the manner of a net, whose meshes will admit the end of a finger. Some have very small feathers here and there on the thighs; and others again have neither feathers nor wrinkles. What are called the legs of birds, in this are covered before with

large scales. The end of the foot is cloven, and has two very large toes, which, like the leg, are covered with scales. These toes are of unequal sizes. The largest, which is on the inside, is seven inches long, including the claw, which is near three-fourths of an inch in length, and almost as broad. The other toe is but four inches long, and is without a claw.

The internal parts of this animal are formed with no less surprising peculiarity. At the top of the breast, under the skin, the fat is two inches thick, and on the fore part of the belly it is as hard as suet, and about two inches and a half thick in some places. It has two distinct stomachs. The first, which is lowermost, in its natural situation somewhat resembles the crop in other birds; but it is considerably larger than the other stomach, and is furnished with strong muscular fibres, as well circular as longitudinal. The second stomach, or gizzard, has outwardly the shape of the stomach of a man; and upon opening is always found filled with a variety of discordant substances—hay, grass, barley, beans, bones, and stones, some of which exceed in size a pullet's egg. The kidneys are eight inches long and two broad, and differ from those of other birds in not being divided into lobes. The heart and lungs are separated by a midriff, as in quadrupeds; and the parts of generation also bear a very strong resemblance and analogy.

Such is the structure of this animal, forming the shade that unites birds and quadrupeds; and from this structure its habits and manners are entirely peculiar. It is a native only of the torrid regions of Africa, and has long been celebrated by those who have had occasion to mention the animals of that region. Its flesh is proscribed in Scripture as unfit to be eaten; and most of the ancient writers des-

scribe it as well known in their times. Like the race of the elephant, it is transmitted down without mixture, and has never been known to breed out of that country which first produced it. It seems formed to live among the sandy and burning deserts of the torrid zone; and as in some measure it owes its birth to their genial influence, so it seldom migrates into tracts more mild or more fertile. As that is the peculiar country of the elephant, the rhinoceros, and camel, so it may readily be supposed capable of affording a retreat to the ostrich. They inhabit from preference the most solitary and horrid deserts, where there are few vegetables to clothe the surface of the earth, and where the rain never comes to refresh it. The Arabians assert that the ostrich never drinks, and the place of its habitation seems to confirm the assertion. In these formidable regions, ostriches are seen in large flocks, which to the distant spectator appear like a regiment of cavalry, and have often alarmed a whole caravan. There is no desert, how barren soever, but what is capable of supplying these animals with provision; they eat almost every thing; and these barren tracts are thus doubly grateful, as they afford both food and security. The ostrich is of all other animals the most voracious. It will devour leather, glass, hair, iron stones, or any thing that is given. Nor are its powers of digestion less in such things as are digestible. Those substances which the coats of the stomach cannot soften, pass whole; so that glass, stones, or iron, are excluded in the form in which they were devoured. All metals, indeed, which are swallowed by any animal, lose a part of their weight, and often the extremities of their figure, from the action of the juices of the stomach upon their surface. A quarter pistole, which was swallowed by a duck, lost seven grains of its weight in the gizzard before

it was voided; and it is probable that a still greater diminution of weight would happen in the stomach of an ostrich: considered in this light, therefore this animal may be said to digest iron; but such substances seldom remain long enough in the stomach of any animal to undergo so tedious a dissolution. However this be, the ostrich swallows almost every thing presented to it. Whether this be from the necessity which smaller birds are under of picking up gravel to keep the coats of their stomach asunder, or whether it be from a want of distinguishing by the taste what substances are fit and what incapable of digestion, certain it is, that in the ostrich dissected by Ranby there appeared such a quantity of heterogeneous substances, that it was wonderful how any animal could digest such an overcharge of nourishment. Valisnieri also found the first stomach filled with a quantity of incongruous substances; grass, nuts, cords, stones, glass, brass, copper, iron, tin, lead, and wood; a piece of stone was found among the rest that weighed more than a pound. He saw one of these animals that was killed by devouring a quantity of quick-lime. It would seem that the ostrich is obliged to fill up the great capacity of its stomach in order to be at ease; but that nutritious substances not occurring, it pours in whatever offers to supply the void.

In their native deserts, however, it is probable they live chiefly upon vegetables, where they lead an inoffensive and social life; the male, as Thevenot assures us, assorting with the female with connubial fidelity. They are said to be very much inclined to venery: and the make of the parts in both sexes seems to confirm the report. It is probable also they copulate, like other birds, by compression; and they lay very large eggs, some of them being above five inches in diameter, and weighing above fifteen

pounds. These eggs have a very hard shell, somewhat resembling those of the crocodile, except that those of the latter are less and rounder.

The season for laying depends on the climate where the animal is bred. In the northern parts of Africa, this season is about the beginning of July; in the south, it is about the latter end of December. These birds are very prolific, and lay generally from forty to fifty eggs at one clutch. It has been commonly reported that the female deposits them in the sand, and, covering them up, leaves them to be hatched by the heat of the climate, and then permits the young to shift for themselves. Very little of this however is true; no bird has a stronger affection for her young than the ostrich, nor none watches her eggs with greater assiduity. It happens, indeed, in those hot climates, that there is less necessity for the continual incubation of the female, and she more frequently leaves her eggs, which are in no risk of being chilled by the weather: but though she sometimes forsakes them by day, she always carefully broods over them by night; and Kolben, who has seen great numbers of them at the Cape of Good Hope, affirms that they sit on their eggs like other birds, and that the male and female take this office by turns, as he had frequent opportunities of observing. Nor is it more true what is said of their forsaking their young after they are excluded the shell. On the contrary, the young ones are not even able to walk for several days after they are hatched. During this time the old ones are very assiduous in supplying them with grass, and very careful to defend them from danger; nay, they encounter every danger in their defence. It was a way of taking them among the ancients, to plant a number of sharp stakes round the ostrich's nest in her absence, upon which she pierced herself at her return. The young,

when brought forth, are of an ash colour the first year, and are covered with feathers all over. But in time these feathers drop, and those parts which are covered assume a different and more becoming plumage.

The beauty of a part of this plumage, particularly the long feathers that compose the wings and tail, is the chief reason that man has been so active in pursuing this harmless bird to its deserts, and hunting it with no small degree of expense and labour. The ancients used these plumes in their helmets; the ladies of the East make them an ornament in their dress; and among us, our undertakers and our fine gentlemen still make use of them to decorate their hearses and their hats. Those feathers which are plucked from the animal while alive are much more valued than those taken when dead, the latter being dry, light, and subject to be worm-eaten.

Besides the value of their plumage, some of the savage nations of Africa hunt them also for their flesh, which they consider as a dainty. They sometimes also breed these birds tame, to eat the young ones, of which the female is said to be the greatest delicacy. Some nations have obtained the name of *Struthophagi*, or ostrich eaters, from their peculiar fondness for this food; and even the Romans themselves were not averse to it. Apicius gives us a receipt for making sauce for the ostrich; and Heliogabalus is noted for having dressed the brains of six hundred ostriches in one dish; for it was his custom never to eat but of one dish in a day, but that was an expensive one. Even among the Europeans now, the eggs of the ostrich are said to be well tasted, and extremely nourishing; but they are too scarce to be fed upon, although a single egg be a sufficient entertainment for eight men.

As the spoils of the ostrich are thus valuable, it is

not to be wondered at that man has become their most assiduous pursuer. For this purpose the Arabians train up their best and fleetest horses, and hunt the ostrich still in view. Perhaps, of all other varieties of the chase, this, though the most laborious, is yet the most entertaining. As soon as the hunter comes within sight of his prey, he puts on his horse with a gentle gallop, so as to keep the ostrich still in sight, yet not so as to terrify him from the plain into the mountains. Of all known animals that make use of their legs in running, the ostrich is by far the swiftest; upon observing himself, therefore, pursued at a distance, he begins to run at first but gently, either insensible of his danger, or sure of escaping. In this situation he somewhat resembles a man at full speed; his wings, like two arms, keep working with a motion correspondent to that of his legs; and his speed would very soon snatch him from the view of his pursuers, but, unfortunately for the silly creature, instead of going off in a direct line, he takes his course in circles; while the hunters still make a small course within, relieve each other, meet him at unexpected turns, and keep him thus still employed, still followed, for two or three days together. At last, spent with fatigue and famine, and finding all power of escape impossible, he endeavours to hide himself from those enemies he cannot avoid, and covers his head in the sand, or the first thicket he meets. Sometimes, however, he attempts to face his pursuers; and, though in general the most gentle animal in nature, when driven to desperation, he defends himself with his beak, his wings, and his feet. Such is the force of his motion, that a man would be utterly unable to withstand him in the shock.

The Struthophagi have another method of taking this bird: they cover themselves with an ostrich's

skin, and passing up an arm through the neck, thus counterfeit all the motions of this animal. By this artifice they approach the ostrich, which becomes an easy prey. He is sometimes also taken by dogs and nets; but the most usual way is that mentioned above.

When the Arabians have thus taken an ostrich, they cut its throat, and making a ligature below the opening, they shake the bird, as one would rinse a barrel; then taking off the ligature, there runs out from the wound in the throat a considerable quantity of blood, mixed with the fat of the animal, and this is considered as one of the greatest dainties. They next flay the bird; and of the skin, which is strong and thick, sometimes make a kind of vest, which answers the purposes of a cuirass and a buckler.

There are others who, more compassionate or more provident, do not kill their captive, but endeavour to tame it, for the purpose of supplying those feathers which are in so great request. The inhabitants of Dara and Libya breed up whole flocks of them, and they are tamed with very little trouble. But it is not for their feathers alone that they are prized in this domestic state; they are often ridden upon, and used as horses. Moore assures us, that at Joar he saw a man travelling upon an ostrich; and Adanson asserts, that at the factory of Podore, he had two which were then young, the strongest of which ran swifter than the best English racer, although he carried two Negroes on his back. As soon as the animal perceived that it was thus loaded, it set off running with all its force, and made several circuits round the village, till at length the people were obliged to stop it by barring up the way. How far this strength and swiftness may be useful to mankind, even in a polished state, is a matter that

perhaps deserves inquiry. Posterity may avail themselves of this creature's abilities; and riding upon an ostrich may one day become the favourite, as it most certainly is the swiftest mode of conveyance.

The parts of this animal are said to be convertible to many salutary purposes in medicine. The fat is said to be emollient and relaxing; that while it relaxes the tendons, it fortifies the nervous system; and being applied to the region of the loins, it abates the pains of the stone in the kidneys. The shell of the egg powdered, and given in proper quantities, is said to be useful in promoting urine, and dissolving the stone in the bladder. The substance of the egg itself is thought to be peculiarly nourishing; however, Galen, in mentioning this, asserts, that the eggs of hens and pheasants are good to be eaten; those of geese and ostriches are the worst of all.

CHAPTER V.

THE EMU.

Of this bird, which many call the American Ostrich, but little is certainly known. It is an inhabitant of the New Continent; and the travellers who have mentioned it seem to have been more solicitous in proving its affinity to the ostrich, than in describing those peculiarities which distinguish it from all others of the feathered creation.

It is chiefly found in Guiana, along the banks of the Oroonoko, in the inland provinces of Brasil and Chili, and the vast forests that border on the mouth of the river Plata. Many other parts of South America were known to have them; but as men multi-

plied, these large and timorous birds either fell beneath their superior power, or fled from their vicinity.

The Emu, though not so large as the ostrich, is only second to it in magnitude. It is by much the largest bird in the New Continent; and is generally found to be six feet high, measuring from its head to the ground. Its legs are three feet long; and its thigh is near as thick as that of a man. The toes differ from those of the ostrich; as there are three in the American bird, and but two in the former. Its neck is long, its head small, and the bill flatted, like that of the ostrich; but, in oll other respects, it more resembles a cassowary, a large bird to be described hereafter. The form of the body appears round, the wings are short, and unfitted for flying, and it entirely wants a tail. It is covered from the back and rump with long feathers, which fall backward, and cover the anus; these feathers are gray upon the back, and white on the belly. It goes very swiftly, and seems assisted in its motion by a kind of tubercle behind, like a heel, upon which, on plain ground, it treads very securely: in its course it uses a very odd kind of action, lifting up one wing, which it keeps elevated for a time, till, letting it drop, it lifts up the other. What the bird's intention may be in thus keeping only one wing up, is not easy to discover; whether it makes use of this as a sail to catch the wind, or whether as a rudder to turn its course, in order to avoid the arrows of the Indians, yet remains to be ascertained: however this be, the emu runs with such swiftness that the fleetest dogs are thrown out in the pursuit. One of them, finding itself surrounded by the hunters, darted among the dogs with such fury that they made way to avoid its rage, and it escaped, by its amazing velocity, in safety to the mountains.

As this bird is but litte known, so travellers have given a loose to their imaginations in describing some of its actions, which they were conscious could not be easily contradicted. This animal, says Nierenberg, is very peculiar in the hatching of its young. The male compels twenty or thirty of the females to lay their eggs in one nest; he then, when they have done laying, chases them away, and places himself upon the eggs; however, he takes the singular precaution of laying two of the number aside, which he does not sit upon. When the young ones come forth, these two eggs are addled; which the male having foreseen, breaks one, and then the other, upon which multitudes of flies are found to settle; and these supply the young brood with a sufficiency of provisions till they are able to shift for themselves.

On the other hand, Wafer asserts, that he has seen great quantities of this animal's eggs on the desert shores, north of the river Plata, where thay were buried in the sand, in order to be hatched by the heat of the climate. Both this, as well as the preceding account, may be doubted; and it is more probable that it was the crocodile's eggs which Wafer had seen, which are undoubtedly hatched in that manner.

When the young ones are hatched, they are familiar, and follow the first person they meet. I have been followed myself, says Wafer, by many of these young ostriches, which at first are extremely harmless and simple; but as they grow older, they become more cunning and distrustful, and run so swift, that a greyhound can scarcely overtake them. Their flesh, in general, is good to be eaten, especially if they be young. It would be no difficult matter to rear up flocks of these animals tame, particularly as they are naturally so familiar; and they might be found to answer domestic purposes, like the hen or

the turkey. Their maintenance could not be expensive, if, as Narborough says, they live entirely upon grass.

CHAPTER VI.

THE CASSOWARY.

THE Cassowary is a bird which was first brought into Europe by the Dutch, from Java, in the East Indies, in which part of the world it is only to be found. Next to the preceding, it is the largest and heaviest of the feathered species.

The cassowary, though not so large as the former, yet appears more bulky to the eye; its body being nearly equal, and its neck and legs much thicker and stronger in proportion: this conformation gives it an air of strength and force, which the fierceness and singularity of its countenance conspire to render formidable. It is five feet and a half long, from the point of the bill to the extremity of the claws. The legs are two feet and a half high, from the belly to the end of the claws. The head and neck together are a foot and a half; and the largest toe, including the claw, is five inches long. The claw alone of the least toe is three inches and a half in length. The wing is so small, that it does not appear; it being hid under the feathers of the back. In other birds, a part of the feathers serve for flight, and are different from those that serve merely for covering; but in the cassowary, all the feathers are of the same kind, and outwardly of the same colour. They are generally double; having two long shafts, which grow out of a short one, which is fixed in the skin. Those that are double are always of an unequal length; for

some are fourteen inches long, particularly on the rump, while others are not above three. The beards that adorn the stem or shaft are, from about half way to the end, very long, and as thick as a horse-hair, without being subdivided into fibres. The stem or shaft is flat, shining, black, and knotted below, and from each knot there proceeds a beard; likewise the beards at the end of the large feathers are perfectly black, and towards the root of a gray tawny colour; shorter, more soft, and throwing out fine fibres, like down; so that nothing appears except the ends, which are hard and black, because the other part, composed of down, is quite covered. There are feathers on the head and neck, but they are so short, and thinly sown, that the bird's skin appears naked, except towards the hinder part of the head, where they are a little longer. The feathers which adorn the rump are extremely thick, but do not differ in other respects from the rest, excepting their being longer. The wings, when they are deprived of their feathers, are but three inches long, and the feathers are like those on other parts of the body. The ends of the wings are adorned with five prickles of different lengths and thickness, which bend like a bow: these are hollow from the roots to the very points, having only that slight substance within which all quills are known to have. The longest of these prickles is eleven inches; and it is a quarter of an inch in diameter at the root, being thicker there than towards the extremity; the point seems broken off.

The part, however, which most distinguishes this animal is the head; this, though small like that of an ostrich, does not fail to inspire some degree of terror. It is bare of feathers, and is in a manner armed with a helmet of horny substance, that covers it from the root of the bill to near half the head backwards.

This helmet is black before and yellow behind. Its substance is very hard, being formed by the elevation of the bone of the skull; and it consists of several plates, one over another, like the horn of an ox. Some have supposed that this was shed every year with the feathers; but the most probable opinion is, that it only exfoliates slowly like the beak. To the peculiar oddity of this natural armour may be added the colour of the eye in this animal, which is a bright yellow, and the globe being above an inch and a half in diameter, gives it an air equally fierce and extraordinary. At the bottom of the upper eye-lid there is a row of small hairs, over which there is another row of black hair, which looks pretty much like an eye-brow. The lower eye-lid, which is the largest of the two, is furnished also with plenty of black hair. The hole of the ear is very large and open, being only covered with small black feathers. The sides of the head, about the eye and ear, being destitute of any covering, are blue, except the middle of the lower eye-lid, which is white. The part of the bill which answers to the upper jaw in other animals, is very hard at the edges above, and the extremity of it like that of a turkey-cock. The end of the lower mandible is slightly notched; and the whole is of a grayish-brown, except a green spot on each side. As the beak admits a very wide opening, this contributes not a little to the bird's menacing appearance. The neck is of a violet colour, inclining to that of slate; and it is red behind in several places, but chiefly in the middle. About the middle of the neck before, at the rise of the large feathers, there are two processes formed by the skin, which resembles somewhat the gills of a cock, but that they are blue as well as red. The skin which covers the fore part of the breast, on which this bird leans and rests, is hard, callous, and without feathers.

The thighs and legs are covered with feathers, and are extremely thick, strong, straight, and covered with scales of several shapes; but the legs are thicker a little above the foot than in any other place. The toes are likewise covered with scales, and are but three in number, for that which should be behind is wanting. The claws are of a hard solid substance, black without, and white within.

The internal parts are equally remarkable. The cassowary unites, with the double stomach of animals that live upon vegetables, the short intestines of those that live upon flesh. The intestines of the cassowary in length, are about one-thirteenth of those of the ostrich. The heart is very small, being but an inch and a half long, and an inch broad at the base. Upon the whole, it has the head of a warrior, the eye of a lion, the defence of a porcupine, and the swiftness of a courser.

Thus formed for a life of hostility, for terrifying others, and for its own defence, it might be expected that the cassowary was one of the most fierce and terrible animals of the creation. But nothing is so opposite to its natural character, nothing so different from the life it is contented to lead: It never attacks others; and instead of the bill when attacked, it rather makes use of its legs, and kicks like a horse, or runs against its pursuer, beats him down, and treads him to the ground.

The manner of going of this animal is not less extraordinary than its appearance. Instead of going directly forward it seems to kick up behind with one leg, and then making a bound onward with the other, it goes with such prodigious velocity that the swiftest racer would be left far behind.

The same degree of voraciousness which we perceive in the ostrich, obtains as strongly here. The cassowary swallows every thing that comes within

the capacity of its gullet. The Dutch assert that it can devour not only glass, iron, and stones, but even live and burning coals, without testifying the smallest fear, or feeling the least injury. It is said that the passage of the food through its gullet is performed so speedily, that even the very eggs which it has swallowed whole pass through it unbroken, in the same form they went down. In fact, the alimentary canal of this animal, as was observed above, is extremely short; and it may happen that many kinds of food are indigestible in its stomach, as wheat or currants are to man, when swallowed whole.

The cassowary's eggs are of a gray ash colour, inclining to green. They are not so large nor so round as those of the ostrich. They are marked with a number of little tubercles of a deep green, and the shell is not very thick. The largest of these is found to be fifteen inches round one way, and about twelve the other.

The southern parts of the most eastern Indies seem to be the natural climate of the cassowary. His domain, if we may so call it, begins where that of the ostrich terminates. The latter has never been found beyond the Ganges, while the cassowary is never seen nearer than the islands of Banda, Sumatra, Java, the Molucca Islands, and the corresponding parts of the continent. Yet even here this animal seems not to have multiplied in any considerable degree, as we find one of the kings of Java making a present of one of these birds to the captain of a Dutch ship, considering it as a very great rarity. The ostrich that has kept in the desert and unpeopled regions of Africa, is still numerous, and the unrivalled tenant of its own inhospitable climate; but the cassowary, that is the inhabitant of a more peopled and polished region, is growing scarcer every day. It is thus that in proportion as man multiplies,

all the savage and noxious animals fly before him: at his approach they quit their ancient habitations, how adapted soever they may be to their natures, and seek a more peaceable though barren retreat; where they willingly exchange plenty for freedom, and encounter all the dangers of famine, to avoid the oppressions of an unrelenting destroyer.

CHAPTER VII.

THE DODO.

MANKIND have generally made swiftness the attribute of birds; but the Dodo has no title to this distinction. Instead of exciting the idea of swiftness by its appearance, it seems to strike the imagination as a thing the most unwieldy and inactive of all nature.. Its body is massive, almost round, and covered with gray feathers; it is just barely supported upon two short thick legs like pillars, while its head and neck rise from it in a manner truly grotesque. The neck, thick, and pursy, is joined to the head, which consists of two great chaps, that open far behind the eyes, which are large, black, and prominent: so that the animal when it gapes seems to be all mouth. The bill therefore is of an extraordinary length, not flat and broad, but thick, and of a bluish-white, sharp at the end, and each chap crooked in opposite directions. They resemble two pointed spoons that are laid together by the backs. From all this results a stupid and voracious physiognomy; which is still more increased by a bordering of feathers round the root of the beak, which gives the appearance of a hood or cowl, and finishes this picture of stupid deformity. Bulk, which in other animals

implies strength; in this only contributes to inactivity. The ostrich, or the cassowary, are no more able to fly than the animal before us; but then they supply that defect by their speed in running. The dodo seems weighed down by its own heaviness, and has scarcely strength to urge itself forward. It seems among birds, what the sloth is among quadrupeds, an unresisting thing, equally incapable of flight or defence: It is furnished with wings, covered with soft ash-coloured feathers, but they are too short to assist it in flying. It is furnished with a tail, with a few small curled feathers, but this tail is disproportioned and displaced. Its legs are too short for running, and its body too fat to be strong. One would take it for a tortoise that had supplied itself with the feathers of a bird; and that, thus dressed out with the instruments of flight, it was only still the more unwieldy.

This bird is a native of the Isle of France; and the Dutch, who first discovered it there, called it in their language, the *nauseous bird*, as well from its disgusting figure, as from the bad taste of its flesh. However succeeding observers contradict this first report, and assert that its flesh is good and wholesome eating. It is a silly simple bird, as may very well be supposed from its figure, and is very easily taken. Three or four dodos are enough to dine a hundred men.

Whether the dodo be the same bird with that which some travellers have described under the Bird of Nazareth, yet remains uncertain. The country from whence they both came is the same; their incapacity of flying is the same; the form of the wings and body in both are similar; but the chief difference given is in the colour of the feathers, which in the female of the bird of Nazareth are said to be extremely beautiful; and in the length of their legs, which in the dodo are short, in the other are de-

scribed as long. Time and future observation must clear up these doubts; and the testimony of a single witness, who shall have seen both, will throw more light on the subject than the reasonings of a hundred philosophers.

CHAPTER VIII.

OF RAPACIOUS BIRDS IN GENERAL.

THERE seems to obtain a general resemblance in all the classes of nature. As, among quadrupeds, a part were seen to live upon the vegetable productions of the earth, and another part upon the flesh of each other; so, among birds, some live upon vegetable food, and others by rapine, destroying all such as want force or swiftness to procure their safety. By thus peopling the woods with animals of different dispositions, nature has wisely provided for the multiplication of life; since, could we suppose that there were as many animals produced as there were vegetables supplied to sustain them, yet there might still be another class of animals formed, which could find a sufficient sustenance by feeding upon such of the vegetable feeders as happened to fall by the course of nature. By this contrivance, a greater number will be sustained upon the whole; for the numbers would be but very thin, were every creature a candidate for the same food. Thus, by supplying a variety of appetites, nature has also multiplied life in her productions.

In thus varying their appetites, nature has also varied the form of the animal; and while she has given some an instinctive passion for animal food, she has also furnished them with powers to obtain

it. All land birds of the rapacious kinds are furnished with a large head, and a strong crooked beak, notched at the end, for the purpose of tearing their prey. They have strong short legs and sharp crooked talons for the purpose of seizing it. Their bodies are formed for war, being fibrous and muscular; and their wings for swiftness of flight, being well feathered and expansive. The sight of such as prey by day is astonishingly quick; and such as ravage by night, have their sight so fitted as to see objects in darkness with extreme precision.

Their internal parts are equally formed for the food they seek for. Their stomach is simple and membranous, and wrapped in fat to increase the powers of digestion; and their intestines are short and glandular. As their food is succulent and juicy, they want no length of intestinal tube to form it into proper nourishment. Their food is flesh, which does not require a slow digestion to be converted into a similitude of substance to their own.

Thus formed for war, they lead a life of solitude and rapacity. They inhabit, by choice, the most lonely places, and the most desert mountains. They make their nests in the clefts of rocks, and on the highest and most inaccessible trees of the forest. Whenever they appear in the cultivated plain, or the warbling grove, it is only for the purposes of depredation, and are gloomy intruders on the general joy of the landscape. They spread terror wherever they approach: all that variety of music, which but a moment before enlivened the grove, at their appearing is instantly at an end; every order of lesser birds seek for safety, either by concealment or flight; and some are even driven to take protection with man, to avoid their less merciful pursuers.

It would indeed be fatal to all the smaller race of birds, if, as they are weaker than all, they were also

pursued by all; but it is contrived wisely for their safety, that every order of carnivorous birds seek only for such as are of the size most approaching their own. The eagle flies at the bustard or the pheasant; the sparrow-hawk pursues the thrush and the linnet. Nature has provided that each species should make war only on such as are furnished with adequate means of escape. The smallest birds avoid their pursuers by the extreme agility, rather than the swiftness, of their flight; for every order would soon be at an end, if the eagle, to its own swiftness of wing, added the versatility of the sparrow.

Another circumstance which tends to render the tyranny of these animals more supportable is, that they are less fruitful than other birds, breeding but few at a time. Those of the larger kind seldom produce above four eggs, often but two; those of the smaller kinds, never above six or seven. The pigeon, it is true, which is their prey, never breeds above two at a time; but then she breeds every month in the year. The carnivorous kinds only breed annually, and of consequence, their fecundity is small in comparison.

As they are fierce by nature, and are difficult to be tamed, so this fierceness extends even to their young, which they force from the nest sooner than birds of the gentler kind. Other birds seldom forsake their young till able, completely, to provide for themselves; the rapacious kinds expel them from the nest at a time when they still should protect and support them. This severity to their young proceeds from the necessity of providing for themselves. All animals that, by the conformation of their stomach and intestines, are obliged to live upon flesh, and support themselves by prey, though they may be mild when young, soon become fierce and mischievous by the very habit of using those arms with

which they are supplied by nature. As it is only by the destruction of other animals that they can subsist, they become more furious every day; and even the parental feelings are overpowered in their general habits of cruelty. If the power of obtaining a supply be difficult, the old ones soon drive their brood from the nest to shift for themselves, and often destroy them in a fit of fury caused by hunger.

Another effect of this natural and acquired severity is, that almost all birds of prey are unsociable. It has long been observed by Aristotle, that all birds with crooked beaks and talons are solitary: like quadrupeds of the cat kind, they lead a lonely wandering life, and are united only in pairs, by that instinct which overpowers their rapacious habits of enmity with all other animals. As the male and female are often necessary to each other in their pursuits, so they sometimes live together; but, except at certain seasons, they most usually prowl alone, and, like robbers, enjoy in solitude the fruits of their plunder.

All birds of prey are remarkable for one singularity, for which it is not easy to account. All the males of these birds are about a third less, and weaker than the females; contrary to what obtains among quadrupeds, among which the males are always the largest and the boldest: from thence the male is called by falconers, a *tercel;* that is, a tierce or third less than the other. The reason of this difference cannot proceed from the necessity of a larger body in the female for the purposes of breeding, and that her volume is thus increased by the quantity of her eggs; for in other birds, that breed much faster, and that lay in much greater proportion, such as the hen, the duck, or the pheasant, the male is by much the largest of the two. Whatever be the cause, certain it is that the females, as Wil-

loughby expresses it, are of greater size, more beautiful and lovely for shape and colours, stronger, more fierce and generous than the males; whether it may be that it is necessary for the female to be thus superior, as it is incumbent upon her to provide, not only for herself, but her young ones also.

These birds, like quadrupeds of the carnivorous kind, are all lean and meagre. Their flesh is stringy and ill tasted, soon corrupting, and tinctured with the flavour of that animal food upon which they subsist. Nevertheless, Belonius asserts, that many people admire the flesh of the vulture and falcon, and dress them for eating, when they meet with any accident that unfits them for the chase. He asserts that the osprey, a species of the eagle, when young, is excellent food; but he contents himself with advising us, to breed these birds up for our pleasure rather in the field than for the table.

Of land birds of a rapacious nature, there are five kinds. The eagle kind, the hawk kind, the vulture kind, the horned, and the screech owl kind. The distinctive marks of this class are taken from their claws and beak: their toes are separated; their legs are feathered to the heel; their toes are four in number, three before, one behind; their beak is short, thick, and crooked.

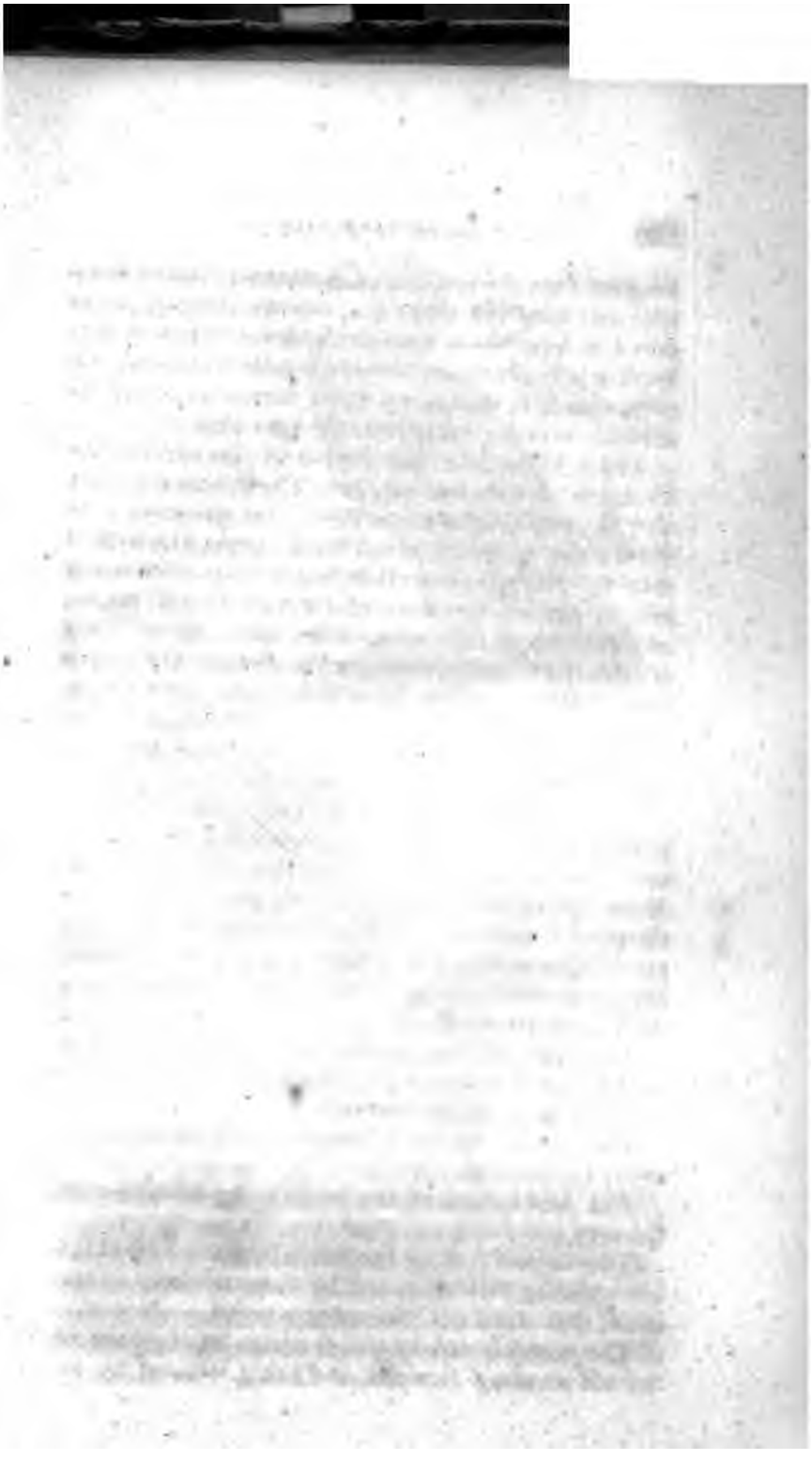
The eagle kind is distinguished from the rest by his beak, which is straight, till towards the end, when it begins to hook downwards.

The vulture kind is distinguished by the head and neck; he is without feathers.

The hawk kind by the beak; being hooked from the very root.

The horned owl by the feathers at the base of the bill standing forwards; and by some feathers on the head, that stand out, resembling horns.

The screech owl by the feathers at the base of the bill standing forward, and being without horns.



1 Golden Eagle_2 Great Vulture_3 Secretary

A description of one in each kind will serve for all the rest.

CHAPTER IX.

THE EAGLE AND ITS AFFINITIES.

The Golden Eagle is the largest and the noblest of all those birds that have received the name of Eagle. It weighs above twelve pounds. Its length is three feet; the extent of its wings seven feet four inches; the bill is three inches long, and of a deep blue colour; and the eye of a hazel colour. The sight and sense of smelling are very acute. The head and neck are clothed with narrow sharp pointed feathers, and of a deep brown colour, bordered with tawny; but those on the crown of the head, in very old birds, turn gray. The whole body, above as well as beneath, is of a dark brown, and the feathers of the back are finely clouded with a deeper shade of the same. The wings when clothed reach to the end of the tail. The quill feathers are of a chocolate colour, the shafts white. The tail is of a deep brown, irregularly barred and blotched with an obscure ash colour, and usually white at the roots of the feathers. The legs are yellow, short, and very strong, being three inches in circumference, and feathered to the very feet. The toes are covered with large scales, and armed with the most formidable claws, the middle of which are two inches long.

In the rear of this terrible bird follow the *ring-tailed eagle*, the *common eagle*, the *bald eagle*, the *white eagle*, the *rough-footed eagle*, the *erne*, the *black eagle*, the *osprey*, the *sea-eagle*, and the *crowned*

eagle. These, and others that might be added, form different shades in this fierce family; but have all the same rapacity, the same general form, the same habits, and the same manner of bringing up their young.

In general, these birds are found in mountainous and ill-peopled countries, and breed among the loftiest cliffs. They choose those places which are remotest from man, upon whose possessions they but seldom make their depredations, being contented rather to follow the wild game in the forest, than to risk their safety to satisfy their hunger.

This fierce animal may be considered among birds as the lion among quadrupeds; and in many respects they have a strong similitude to each other. They are both possessed of force, and an empire over their fellows of the forest. Equally magnanimous, they disdain smaller plunder, and only pursue animals worthy the conquest. It is not till after having been long provoked by the cries of the rook or the magpie, that this generous bird thinks fit to punish them with death: the eagle also disdains to share the plunder of another bird; and will take up with no other prey but that which he has acquired by his own pursuits. How hungry soever he may be, he never stoops to carrion; and when satiated, he never returns to the same carcass, but leaves it for other animals, more rapacious and less delicate than he. Solitary, like the lion, he keeps the desert to himself alone; it is as extraordinary to see two pair of eagles in the same mountain, as two lions in the same forest. They keep separate to find a more ample supply, and consider the quantity of their game as the best proof of their dominion. Nor does the similitude of these animals stop here: they have both sparkling eyes, and nearly of the same colour; their claws are of the same form, their breath equally

strong, and their cry equally loud and terrifying. Bred both for war, they are enemies of all society; alike fierce, proud, and incapable of being easily tamed. It requires great patience and much art to tame an eagle; and even though taken young, and brought under by long assiduity, yet still it is a dangerous domestic, and often turns its force against its master. When brought into the field for the purposes of fowling, the falconer is never sure of its attachment: that innate pride, and love of liberty, still prompt it to regain its native solitudes; and the moment the falconer sees it, when let loose, first stoop towards the ground, and then rise perpendicularly into the clouds, he gives up all his former labour for lost, quite sure, of never beholding his late prisoner more. Sometimes, however, they are brought to have an attachment for their feeder; they are then highly serviceable, and liberally provide for his pleasures and support. When the falconer lets them go from his hand, they play about and hover round him till their game presents, which they see at an immense distance, and pursue with certain destruction.

Of all animals the eagle flies highest; and from thence the ancients have given him the epithet of *the bird of Heaven*. Of all others also, he has the quickest eye; but his sense of smelling is far inferior to that of the vulture. He never pursues, therefore, but in sight; and when he has seized his prey, he stoops from his height, as if to examine its weight, always laying it on the ground before he carries it off. As his wing is very powerful, yet as he has but little suppleness in the joints of the leg, he finds it difficult to rise when down; however, if not instantly pursued, he finds no difficulty in carrying off geese and cranes. He also carries away hares, lambs, and kids; and often destroys fawns and calves, to drink

their blood, and carries a part of their flesh to his retreat. Infants themselves, when left unattended, have been destroyed by these rapacious creatures; which probably gave rise to the fable of Ganymede's being snatched up by an eagle to heaven.

An instance is recorded in Scotland of two children being carried off by eagles; but fortunately they received no hurt by the way, and the eagles being pursued, the children were restored unhurt out of the nests to the affrighted parents.

The eagle is thus at all times a formidable neighbour, but particularly when bringing up its young. It is then that the female, as well as the male, exert all their force and industry to supply their young. Smith, in his History of Kerry, relates, that a poor man in that country got a comfortable subsistence for his family, during a summer of famine, out of an eagle's nest, by robbing the eaglets of food, which was plentifully supplied by the old ones. He protracted their assiduity beyond the usual time, by clipping the wings, and retarding the flight of the young, and very probably also, as I have known myself, by so tying them as to increase their cries, which is always found to increase the parent's despatch to procure them provision. It was lucky, however, that the old eagles did not surprise the countryman as he was thus employed, as their resentment might have been dangerous.

It happened some time ago, in the same country, that a peasant resolved to rob the nest of an eagle that had built in a small island in the beautiful lake of Killarney. He accordingly stripped, and swam in upon the island while the old ones were away; and, robbing the nest of its young, he was preparing to swim back, with the eaglets tied in a string; but, while he was yet up to his chin in the water, the old eagles returned, and, missing their young, quickly

fell upon the plunderer, and, in spite of all his resistance, despatched him with their beaks and talons.

In order to extirpate these pernicious birds, there is a law in the Orkney islands which entitles any person that kills an eagle to a hen out of every house in the parish in which the plunderer is killed.

The nest of the eagle is usually built in the most inaccessible cliff of the rock, and often shielded from the weather by some jutting crag that hangs over it. Sometimes, however, it is wholly exposed to the winds, as well sidewise as above; for the nest is flat, though built with great labour. It is said that the same nest serves the eagle during life; and indeed the pains bestowed in forming it seems to argue as much. One of these was found in the Peak of Derbyshire; which Willoughby thus describes. "It was made of great sticks, resting one end on the edge of a rock, the other on two birch trees. Upon these was a layer of rushes, and over them a layer of heath, and upon the heath rushes again; upon which lay one young one and an addle egg, and by them a lamb, a hare, and three heath-pouts. The nest was about two yards square, and had no hollow in it. The young eagle was of the shape of a goshawk, of almost the weight of a goose, rough-footed, or feathered down to the foot, having a white ring about the tail." Such is the place where the female eagle deposits her eggs, which seldom exceed two at a time in the larger species, and not above three in the smallest. It is said that she hatches them for thirty days; but frequently, even of this small number of eggs, a part is addled, and it is extremely rare to find three eaglets in the same nest. It is asserted, that as soon as the young ones are somewhat grown, the mother kills the most feeble or the most voracious. If this happens, it must proceed only from the necessities of the parent, who is incapable

of providing for their support, and is content to sacrifice a part to the welfare of all.

The plumage of the eaglets is not so strongly marked as when they come to be adult. They are at first white, then inclining to yellow, and at last of a light brown. Age, hunger, long captivity, and diseases, make them whiter. It is said they live above a hundred years; and that they at last die, not of old age, but from the beaks turning inward upon the under mandible, and thus preventing their taking any food. They are equally remarkable, says Mr. Pennant, for their longevity and for their power of sustaining a long abstinence from food. One of this species, which has now been nine years in the possession of Mr. Owen Holland, of Conway, lived thirty-two years with the gentleman who made him a present of it; but what its age was when the latter received it from Ireland, is unknown. The same bird also furnishes a proof of the truth of the other remark; having once, through the neglect of servants endured hunger for twenty-one days without any sustenance whatever.

Those eagles which are kept tame are fed with every kind of flesh, whether fresh or corrupting; and when there is a deficiency of that, bread or any othe provision will suffice. It is very dangerous approaching them if not quite tame; and they sometimes send forth a loud piercing lamentable cry, which renders them still more formidable. The eagle drinks but seldom; and perhaps, when at liberty, not at all, as the blood of its prey serves to quench its thirst. The eagle's excrements are always soft and moist, and tinged with that whitish substance which, as was said before, mixes in birds with the urine.

Such are the general characteristics and habitudes of the eagle; however, in some these habitudes differ, as the Sea Eagle and the Osprey live chiefly upon

fish, and consequently build their nests on the sea-shore, and by the sides of rivers, on the ground among reeds; and often lay three or four eggs, rather less than those of a hen, of a white elliptical form. They catch their prey, which is chiefly fish, by darting down upon them from above. The Italians compare the violent descent of these birds on their prey to the fall of lead into water, and call them Aquila Piombina, or the Leaden Eagle.

Nor is the Bald Eagle, which is an inhabitant of North Carolina, less remarkable for habits peculiar to itself. These birds breed in that country all the year round. When the eaglets are just covered with down, and a sort of white woolly feathers, the female eagle lays again. These eggs are left to be hatched by the warmth of the young ones that continue in the nest; so that the flight of one brood makes room for the next, that are but just hatched. These birds fly very heavily; so that they cannot overtake their prey, like others of the same denomination. To remedy this, they often attend a sort of fishing-hawk, which they pursue, and strip the plunderer of its prey. This is the more remarkable, as this hawk flies swifter than they. These eagles also generally attend upon fowlers in the winter; and when any birds are wounded, they are sure to be seized by the eagle, though they may fly from the fowler. This bird will often also steal young pigs, and carry them alive to the nest, which is composed of twigs, sticks, and rubbish: it is large enough to fill the body of a cart; and is commonly full of bones half eaten, and putrid flesh, the stench of which is intolerable.

The distinctive marks of each species are as follow.

The *golden eagle:* of a tawny iron colour; the head and neck of a reddish iron; the tail feathers of a dirty white, marked with cross bands of tawny iron; the legs covered with tawny iron feathers.

The *common eagle:* of a brown colour; the head and upper part of the neck inclining to red; the tail feathers white, blackening at the ends; the outer ones on each side of an ash colour; the legs covered with feathers of a reddish-brown.

The *bald eagle:* brown; the head, neck, and tail feathers white; the feathers of the upper part of the leg brown.

The *white eagle:* the whole white.

The *rough-footed eagle:* of a dirty brown; spotted under the wings, and on the legs, with white; the feathers of the tail white at the beginning and the point; the leg feathers dirty brown, spotted with white.

The *white-tailed eagle:* dirty brown; head white; the stems of the feathers black; the rump inclining to black; the tail feathers, the first half black, the end half white; legs naked.

The *erne:* a dirty iron colour above, an iron mixed with black below; the head and neck ash, mixed with chesnut; the points of the wings blackish; the tail feathers white; the legs naked.

The *black eagle:* blackish; the head and upper neck mixed with red; the tail feathers, the first half white, speckled with black, the other half blackish; the leg feathers dirty white.

The *sea eagle:* inclining to white, mixed with iron-brown, belly white, with iron-coloured spots; the covert feathers of the tail whitish; the tail feathers black at the extremity; the upper part of the leg feathers of an iron-brown.

The *osprey:* brown above; white below; the back of the head white; the outward tail feathers, on the inner side, streaked with white; legs naked.

The *jean le blanc:* above, brownish gray; below, white, spotted with tawny brown; the tail feathers on the outside and at the extremity brown; on the inside, white, streaked with brown legs naked.

The *eagle of Brasil:* blackish brown; ash colour, mixed in the wings; tail feathers white; legs naked.

The *Oroonoko eagle:* with a topping above, blackish-brown; below, white, spotted with black; upper neck yellow; tail feathers brown, with white circles; leg feathers white, spotted with black.

The *crowned African eagle:* with a topping; the tail of an ash colour, streaked on the upper side with black.

The *eagle of Pondicherry:* chesnut colour; the six outward tail feathers black one half.

[Many other species have been distinguished by ornithologists, but one observed by Mr. Bruce on the mountain Lamalmon, in Abyssinia, deserves particular notice, as being not only the largest of the eagle kind, but, in his opinion, the largest bird that flies. He calls it the *golden eagle;* by the natives it is vulgarly called *abon duchn,* or *father long-beard.* It is not an object of any chase, nor stood in need of any stratagem to bring it within reach. Upon the highest top of the mountain Lamalmon, while Mr. Bruce's servants were refreshing themselves from that toilsome rugged ascent, and enjoying the pleasure of a most delightful climate, eating their dinner in the outer air with several large dishes of boiled goat's flesh before them, this eagle suddenly made its appearance: he did not stoop rapidly from a height, but came flying slowly along the ground, and sat down close to the meat within the ring the men had made round it. A great shout, or rather cry of distress, which they raised, made the bird stand for a minute as if to recollect himself, while the servants ran for their lances and shields. His attention was fully fixed upon the flesh. He put his foot into the pan where was a large piece in water prepared for boiling; but finding the smart which he had not expected, he withdrew it, and forsook the

piece which he held. There were two large pieces a leg and a shoulder, lying upon a wooden platter; into these he trussed both his claws and carried them off, skimming slowly along the ground as he had come, till he disappeared behind a cliff. But being observed at his departure to look wistfully at the large piece which remained in the warm water, it was concluded that he would soon return, in expectation of which Mr. Bruce loaded a rifle-gun with ball, and sat down close to the platter by the meat. It was not many minutes before he came, and a prodigious shout was raised by the attendants, "He is coming, he is coming!" enough to have discouraged a less courageous animal. Whether it was not quite so hungry as at the first visit, or suspected something from Mr. Bruce's appearance, it made a small turn, and sat down about ten yards from him, the pan with the meat being between them. In this situation Mr. Bruce fired; and shot him with the ball through the middle of his body, about two inches below the wing, so that he lay down upon the grass without a single flutter. Upon laying hold of his monstrous carcass, Mr. Bruce was not a little surprised at seeing his hands covered and tinged with yellow powder or dust. Upon turning him upon his belly, and examining the feathers of his back, they produced a brown dust, the colour of the feathers there. This dust was not in small quantities; for upon striking his breast, the yellow powder flew in fully greater quantity than from a hair-dresser's powder puff. The feathers of the belly and breast, which were of a gold colour, did not appear to have any thing extraordinary in their formation; but the large feathers in the shoulder and wings seemed apparently to be fine tubes, which upon pressure scattered this dust upon the finer part of the feather, but this was brown, the colour of the feathers of the

back. Upon the side of the wing, the ribs, or hard part of the feather, seemed to be bare as if worn, or, in Mr. Bruce's opinion, were rather renewing themselves, having before failed in their function. What is the reason of this extraordinary provision of nature, he does not pretend to determine. But as it is an unusual one, it is probably meant, he thinks, for a defence against the climate in favour of those birds, which live in the almost inaccessible heights of a country doomed even in its lower parts to several months of excessive rain. According to Mr. Bruce's description, this bird, from wing to wing, was eight feet four inches; from the tip of his tail to the point of his beak when dead, four feet seven inches. He was remarkably short in the legs, being only four inches from the joining of the foot to where the leg joins the thigh, and from the joint of the thigh to the joining of his body six inches. The thickness of his thigh was little less than four inches; it was extremely muscular, and covered with flesh. His middle claw was about two inches and a half long, not very sharp at the point, but extremely strong. From the root of the bill to the point was three inches and a quarter, and one inch and three quarters in breadth at the root. A forked brush of strong hair divided at the point into two, proceeded from the cavity of his lower jaw at the beginning of his throat. His eye was remarkably small in proportion to his bulk, the aperture being scarcely half an inch. The crown of his head was bare or bald, as was also the front where the bill and skull joined.]

CHAPTER X.

THE CONDOR OF AMERICA.

We might now come to speak of the vulture kind, as they hold the next rank to the eagle; but we are interrupted in our method, by the consideration of an enormous bird, whose place is not yet ascertained, as naturalists are in doubt whether to refer it to the eagle tribe or to that of the vulture. Its great strength, force and vivacity, might plead for its place among the former; the baldness of its head and neck might be thought to degrade it among the latter. In this uncertainty, it will be enough to describe the bird by the lights we have, and leave future historians to settle its rank in the feathered creation. Indeed if size and strength, combined with rapidity of flight and rapacity, deserve pre-eminence, no bird can be put in competition with it.

The condor possesses, in a higher degree than the eagle, all the qualities that render it formidable, not only to the feathered kind, but to beasts, and even to man himself. Acosta, Garcillasso, and Desmarchais, assert, that it is eighteen feet across, the wings extended. The beak is so strong as to pierce the body of a cow; and two of them are able to devour it. They do not even abstain from man himself: but fortunately there are but few of the species; for if they had been plenty, every order of animals must have carried on an unsuccessful war against them. The Indians assert, that they will carry off a deer, or a young calf, in their talons, as eagles would a hare or a rabbit; that their sight is piercing, and their air terrible; that they seldom frequent the forests, as they require a large space for the display of their wings, but that they are found

on the sea-shore, and the banks of rivers, whither they descend from the heights of the mountains. By later accounts we learn, that they come down to the sea-shore only at certain seasons, when their prey happens to fail them upon land; that they then feed upon dead fish, and such other nutritious substances as the sea throws up on the shore. We are assured, however, that their countenance is not so terrible as the old writers have represented it, but that they appear of a milder nature than either the eagle or the vulture.

Condamine has frequently seen them in several parts of the mountains of Quito, and observed them hovering over a flock of sheep: and he thinks they would at a certain time have attempted to carry one off, had they not been scared away by the shepherds. Labat acquaints us, that those who have seen this animal declare, that the body is as large as that of a sheep, and that the flesh is tough, and as disagreeable as carrion. The Spaniards themselves seem to dread its depredations; and there have been many instances of its carrying off their children.

Mr. Strong, the master of a ship, as he was sailing along the coasts of Chili, in the thirty-third degree of south latitude, observed a bird sitting upon a high cliff near the shore, which some of the ship's company shot with a leaden bullet, and killed. They were greatly surprised when they beheld its magnitude; for when the wings were extended they measured thirteen feet from one tip to the other. One of the quills was two feet four inches long; and the barrel, or hollow part, was six inches and three quarters, and an inch and a half in circumference.

We have a still more circumstantial account of this amazing bird, by P. Feuillée, the only traveller who has accurately described it: "In the valley of Illo in Peru I discovered a condor, perched on a

high rock before me: I approached within gun-shot, and fired; but as my piece was only charged with swan-shot, the lead was not able sufficiently to pierce the bird's feathers. I perceived, however, by its manner of flying, that it was wounded; and it was with a good deal of difficulty that it flew to another rock, about five hundred yards distant, on the sea-shore. I therefore charged again with ball, and hit the bird under the throat, which made it mine. I accordingly ran up to seize it; but even in death it was terrible, and defended itself upon its back, with its claws extended against me, so that I scarcely knew how to lay hold of it. Had it not been mortally wounded, I should have found it no easy matter to take it; but I at last dragged it down from the rock, and with the assistance of one of the seamen, I carried it to my tent, to make a coloured drawing.

"The wings of this bird, which I measured very exactly, were twelve feet three inches, (English) from tip to tip. The great feathers, that were of a beautiful shining black, were two feet four inches long. The thickness of the beak was proportionable to the rest of the body; the length about four inches; the point hooked downwards, and white at its extremity; and the other part was of a jet black. A short down, of a brown colour, covered the head; the eyes were black, and surrounded with a circle of reddish-brown. The feathers on the breast, neck, and wings, were of a light brown; those on the back were rather darker. Its thighs were covered with brown feathers to the knee. The thigh-bone was ten inches long, the leg five inches; the toes were three before, and one behind; that behind was an inch and a half, and the claw with which it was armed was black, and three quarters of an inch. The other claws were in the same proportion; and the leg was covered with black scales; as also the toes; but in these the scales were larger.

"These birds usually keep in the mountains, where they find their prey; they never descend to the sea-shore but in the rainy season; for as they are very sensible of cold, they go there for greater warmth. Though these mountains are situated in the torrid zone, the cold is often very severe; for a great part of the year they are covered with snow, but particularly in winter.

"The little nourishment which these birds find on the sea-coast, except when the tempest drives in some great fish, obliges the condor to continue there but a short time. They usually come to the coast at the approach of evening, stay there all night, and fly back in the morning."

It is doubted whether this animal be proper to America only, or whether it may not have been described by the naturalists of other countries. It is supposed that the great bird called the Rock, described by Arabian writers, and so much exaggerated by fable, is but a species of the condor. The great bird of Tarnassar, in the East Indies, that is larger than the eagle, as well as the vulture of Senegal that carries off children, are probably no other than the bird we have been describing. Russia, Lapland, and even Switzerland and Germany, are said to have known this animal. A bird of this kind was shot in France, that weighed eighteen pounds, and was said to be eighteen feet across the wings: however, one of the quills was described only as being larger than that of a swan, so that probably the breadth of the wings may have been exaggerated, since a bird so large would have the quills more than twice as big as those of a swan. However this be, we are not to regret that it is scarcely ever seen in Europe, as it appears to be one of the most formidable enemies of mankind. In the deserts of Pachomac, where it is chiefly seen, men seldom venture to travel. Those

wild regions are very sufficient of themselves to inspire a secret horror; broken precipices—prowling panthers—forests only vocal with the hissing of serpents—and mountains rendered still more terrible by the condor, the only bird that ventures to make its residence in those deserted situations.

CHAPTER XI.

OF THE VULTURE, AND ITS AFFINITIES.

The first rank in the description of birds has been given to the eagle, not because it is stronger or larger than the vulture, but because it is more generous and bold. The eagle, unless pressed by famine, will not stoop to carrion; and never devours but what he has earned by his own pursuit. The vulture, on the contrary, is indelicately voracious, and seldom attacks living animals, when it can be supplied with the dead. The eagle meets and singly opposes his enemy; the vulture, if it expects resistance, calls in the aid of its kind, and basely overpowers its prey by a cowardly combination. Putrefaction and stench, instead of deterring, only serve to allure them. The vulture seems among birds what the jackall and hyæna are among quadrupeds, who prey upon carcasses, and root up the dead.

Vultures may be easily distinguished from all those of the eagle kind, by the nakedness of their heads and necks, which are without feathers, and only covered with a very slight down, or a few scattered hairs. Their eyes are more prominent, those of the eagle being buried more in the socket. Their claws are shorter and less hooked. The inside of the wing is covered with a thick down, which is different in

them from all other birds of prey. Their attidude is not so upright as that of the eagle, and their flight more difficult and heavy.

In this tribe we may range the golden, the ash-coloured, and the brown vulture, which are inhabitants of Europe; the spotted and the black vulture of Egypt; the bearded vulture, the Brasilian vulture, and the king of the vultures, of South America. They all agree in their nature, being equally indolent, yet rapacious and unclean.

The Golden Vulture seems to be the foremost of the kind, and is in many things like the golden eagle, but larger in every proportion. From the end of the beak to that of the tail, it is four feet and a half; and to the claws' end, forty-five inches. The length of the upper mandible is almost seven inches; and the tail twenty-seven in length. The lower part of the neck, breast, and belly, are of a red colour; but on the tail it is more faint, and deeper near the head. The feathers are black on the back, and on the wings and tail of a yellowish-brown. Others of the kind differ from this in colour and dimensions; but they are all strongly marked by their naked heads, and beak straight in the beginning, but hooking at the point.

They are still more strongly marked by their nature, which, as has been observed, is cruel, unclean, and indolent. Their sense of smelling, however, is amazingly great; and nature, for this purpose, has given them two large apertures or nostrils without, and an extensive olfactory membrane within. Their intestines are formed differently from those of the eagle kind; for they partake more of the formation of such birds as live upon grain. They have both a crop and a stomach, which may be regarded as a kind of gizzard, from the extreme thickness of the muscles of which it is composed. In fact, they seem

adapted inwardly, not only for being carnivorous, but to eat corn, or whatsoever of that kind comes in their way.

This bird, which is common in many parts of Europe, and but too well known on the western continent, is totally unknown in England. In Egypt, Arabia, and many other kingdoms of Africa and Asia, vultures are found in great abundance. The inside down of their wing is converted into a very warm and comfortable kind of fur, and is commonly sold in the Asiatic markets.

Indeed, in Egypt this bird seems to be of singular service. There are great flocks of them in the neighbourhood of Grand Cairo, which no person is permitted to destroy. The service they render the inhabitants, is the devouring all the carrion and filth of that great city, which might otherwise tend to corrupt and putrefy the air. They are commonly seen in company with the wild dogs of the country, tearing a carcass very deliberately together. This odd association produces no quarrels; the birds and quadrupeds seem to live amicably, and nothing but harmony subsists between them. The wonder is still the greater, as both are extremely rapacious, and both lean and bony to a very great degree; probably having no great plenty even of the wretched food on which they subsist.

In America they lead a life somewhat similar. Wherever the hunters, who there only pursue beasts for the skins, are found to go, these birds are seen to pursue them. They still keep hovering at a little distance; and when they see the beast flayed and abandoned, they call out to each other, pour down upon the carcass, and in an instant pick its bones as bare and clean as if they had been scraped by a knife.

At the Cape of Good Hope, in Africa, they seem

to discover a still greater share of dexterity in their methods of carving. "I have," says Kolben, "been often a spectator of the manner in which they have anatomized a dead body: I say anatomized, for no artist in the world could have done it more cleanly. They have a wonderful method of separating the flesh from the bones, and yet leaving the skin quite entire. Upon coming near the carcass, one would not suppose it thus deprived of its internal substance, till he began to examine it more closely; he then finds it, literally speaking, nothing but skin and bone. Their manner of performing the operation is this: they first make an opening in the belly of the animal, from whence they pluck out and greedily devour the entrails; then entering into the hollow which they have made, they separate the flesh from the bones, without ever touching the skin. It often happens that an ox returning home alone to its stall from the plough, lies down by the way; it is then, if the vultures perceive it, that they fall with fury down, and inevitably devour the unfortunate animal. They sometimes attempt them grazing in the fields; and then, to the number of a hundred or more, make their attack all at once and together."

"They are attracted by carrion," says Catesby, "from a very great distance. It is pleasant to behold them, when they are thus eating, and disputing for their prey. An eagle generally presides at these entertainments, and makes them all keep their distance till he has done. They then fall to with an excellent appetite; and their sense of smelling is so exquisite, that the instant a carcass drops, we may see the vultures floating in the air from all quarters, and come sousing on their prey." It is supposed by some, that they eat nothing that has life; but this is only when they are not able; for when they can come at lambs, they show no mercy; and serpents are

their ordinary food. The manner of those birds is to perch themselves, several together, on the old pine and cypress trees, where they continue all the morning, for several hours, with their wings unfolded, nor are they fearful of danger, but suffer people to approach them very near, particularly when they are eating.

The sloth, the filth, and the voraciousness of these birds, almost exceed credibility. In the Brasils, where they are found in great abundance, when they light upon a carcass which they have liberty to tear at their ease, they so gorge themselves that they are unable to fly, but keep hopping along when they are pursued. At all times they are a bird of slow flight, and unable readily to raise themselves from the ground; but when they have over-fed, they are then utterly helpless; but they soon get rid of their burden, for they have a method of vomiting up what they have eaten, and then they fly off with greater facility.

It is pleasant, however, to be a spectator of the hostilities between animals that are thus hateful or noxious. Of all creatures, the two most at enmity are the vulture of Brasil and the crocodile. The female of this terrible amphibious creature, which in the rivers of that part of the world grows to the size of twenty-seven feet, lays its eggs, to the number of one or two hundred, in the sands, on the side of the river, where they are hatched by the heat of the climate. For this purpose she takes every precaution to hide from all other animals the place where she deposits her burden: in the meantime, a number of vultures, or galinassos as the Spaniards call them, sit silent and unseen, in the branches of some neighbouring forest, and view the crocodile's operations, with the pleasing expectation of succeeding plunder. They patiently wait till the croco-

dile has laid the whole number of her eggs, till she has covered them carefully under the sand, and until she is retired from them to a convenient distance. Then, all together, encouraging each other with cries, they pour down upon the nest, hook up the sand in a moment, lay the eggs bare, and devour the whole brood without remorse. Wretched as is the flesh of these animals, yet men, perhaps, when pressed by hunger, have been tempted to taste it. Nothing can be more lean, stringy, nauseous, and unsavoury. It is in vain that, when killed, the rump has been cut off; in vain the body has been washed, and spices used to overpower its prevailing odour; it still smells and tastes of the carrion by which it was nourished, and sends forth a stench that is insupportable.

These birds, at least those of Europe, usually lay two eggs at a time, and produce but once a-year. They make their nests in inaccessible cliffs, and in places so remote that it is rare to find them. Those in our part of the world chiefly reside in the places where they breed, and seldom come down into the plains, except when the snow and ice, in their native retreats, has banished all living animals but themselves; they then come from their heights, and brave the perils they must encounter in a more cultivated region. As carrion is not found at those seasons in sufficient quantity, or sufficiently remote from man to sustain them, they prey upon rabbits, hares, serpents, and whatever small game they can overtake or overpower.

Such are the manners of this bird in general; but there is one of the kind, called the King of the Vultures, which from its extraordinary figure deserves a separate description. This bird is a native of America, and not of the East Indies, as those who make a trade of showing birds would induce us to

believe. This bird is larger than a turkey-cock; but is chiefly remarkable for the odd formation of the skin of the head and neck, which is bare. This skin arises from the base of the bill, and is of an orange colour; from whence it stretches on each side of the head; from thence it proceeds, like an indented comb, and falls on either side, according to the motion of the head. The eyes are surrounded by a red skin, of a scarlet colour; and the iris has the colour and lustre of pearl. The head and neck are without feathers, covered with a flesh-coloured skin on the upper part, a fine scarlet behind the head, and a duskier coloured skin before; farther down behind the head arises a little tuft of black down, from whence issues and extends beneath the throat, on each side, a wrinkled skin, of a brownish colour, mixed with blue, and reddish behind; below, upon the naked part of the neck, is a collar formed by soft longish feathers, of a deep ash-colour, which surround the neck, and cover the breast before. Into this collar the bird sometimes withdraws its whole neck, and sometimes a part of its head, so that it looks as if it had withdrawn the neck into the body. Those marks are sufficient to distinguish this bird from all others of the vulture kind; and it cannot be doubted but that it is the most beautiful of all this deformed family: however, neither its habits nor instincts vary from the rest of the tribe; being, like them, a slow cowardly bird, living chiefly upon rats, lizards, and serpents, and upon carrion or excrement, when it happens to be in the way. The flesh is so bad, that even savages themselves cannot abide it.

1. Sparrow Hawk — 2. Falcon — 3. Buzzard — 4. King Vulture.

CHAPTER XII.

OF THE FALCON KIND, AND ITS AFFINITIES.

EVERY creature becomes more important in the history of nature in proportion as it is connected with man. In this view, the smallest vegetable, or the most seemingly contemptible insect, is a subject more deserving attention, than the most flourishing tree or the most beautiful of the feathered creation. In this view, the Falcon is a more important animal than the eagle or the vulture; and though so very diminutive in the comparison, is, notwithstanding, from its connexion with our pleasures, a much more interesting object of curiosity.

The amusement of hawking, indeed, is now pretty much given over in this kingdom; for, as every country refines, as its enclosures become higher and closer, those rural sports must consequently decline, in which the game is to be pursued over a long extent of country, and where, while every thing retards the pursuer below, nothing can stop the object of his pursuit above.

Falconry, that is now so much disused among us, was the principal amusement of our ancestors. A person of rank scarcely stirred out without his hawk on his hand, which in old paintings is the criterion of nobility. Harold, afterwards king of England, when he went on a most important embassy into Normandy, is drawn in an old bas-relief, as embarking with a bird on his fist and a dog under his arm. In those days it was thought sufficient for noblemen's sons to wind the horn, and to carry their hawk fair, and leave study and learning to the children of meaner people. Indeed, this diversion was in such high esteem among the great all over Eu-

rope, that Frederic, one of the emperors of Germany, thought it not beneath him to write a treatise upon hawking.

The expense which attended this sport was very great: among the old Welsh princes, the king's falconer was the fourth officer in the state; but, notwithstanding all his honours, he was forbid to take more than three draughts of beer from his horn, lest he should get drunk and neglect his duty. In the reign of James the First, Sir Thomas Monson is said to have given a thousand pounds for a cast of hawks; and such was their value in general, that it was made felony in the reign of Edward the Third to steal a hawk. To take its eggs, even in a person's own ground, was punishable with imprisonment for a year and a day, together with a fine at the king's pleasure. In the reign of Elizabeth, the imprisonment was reduced to three months; but the offender was to lie in prison till he got security for his good behaviour for seven years farther. In the earlier times, the art of gunning was but little practised, and the hawk was then valuable, not only for its affording diversion, but for its procuring delicacies for the table that could seldom be obtained any other way.

Of many of the ancient falcons used for this purpose, we at this time know only the names, as the exact species are so ill described, that one may be very easily mistaken for another. Of those in use at present, both here and in other countries, are the gyr-falcon, the falcon, the lanner, the sacre, the hobby, the kestril and the merlin. These are called the long-winged hawks, to distinguish them from the goss-hawk, the sparrow-hawk, the kite, and the buzzard, that are of shorter wing, and either too slow, too cowardly, too indolent, or too obstinate, to be serviceable in contributing to the pleasures of the field.

The generous tribe of hawks, as was said, are distinguished from the rest by the peculiar length of their wings, which reach nearly as low as the tail. In these, the first quill of the wing is nearly as long as the second; it terminates in a point, which begins to diminish from about an inch of its extremity. This sufficiently distinguishes the generous breed from that of the baser race of kites, sparrow-hawks and buzzards, in whom the tail is longer than the wings, and the first feather of the wing is rounded at the extremity. They differ also in the latter having the fourth feather of the wing the longest; in the generous race it is always the second.

The generous race, which have been taken into the service of man, are endowed with natural powers that the other kinds are not possessed of. From the length of their wings, they are swifter to pursue their game; from a confidence in this swiftness, they are bolder to attack it; and from an innate generosity, they have an attachment to their feeder, and consequently a docility which the baser birds are strangers to.

The gyr-falcon leads in this bold train. He exceeds all other falcons in the largeness of his size, for he approaches nearly to the magnitude of the eagle. The top of the head is flat, and of an ash colour, with a strong, thick, short, and blue beak. The feathers of the back and wings are marked with black spots, in the shape of a heart: he is a courageous and fierce bird, nor fears even the eagle himself; but he chiefly flies at the stork, the heron, and the crane. He is mostly found in the colder regions of the north, but loses neither his strength nor his courage when brought into the milder climates.

The falcon properly so called, is the second in magnitude and fame. There are some varieties in

this bird; but there seem to be only two that claim distinction, the falcon-gentil and the peregrine-falcon; both are much less than the gyr, and somewhat about the size of a raven. They differ but slightly, and perhaps only from the different states they were in when brought into captivity. Those differences are easier known by experience than taught by description. The falcon-gentil moults in March, and often sooner; the peregrine-falcon does not moult till the middle of August. The peregrine is stronger in the shoulder, has a larger eye, and yet more sunk in the head; his beak is stronger, his legs longer, and the toes better divided.

Next in size to these is the lanner, a bird now very little known in Europe; then follows the sacre, the legs of which are of a bluish colour, and serve to distinguish that bird; to them succeeds the hobby, used for smaller game, for daring larks, and stooping at quails. The kestril was trained for the same purposes; and lastly, the merlin, which, though the smallest of all the hawk or falcon kind, and not much larger than a thrush, yet displays a degree of courage that renders him formidable, even to birds ten times his size. He has often been known to kill a partridge or a quail at a single pounce from above.

Some of the other species of sluggish birds were now and then trained to this sport, but it was when no better could be obtained; but these just described were only considered as birds of the nobler races. Their courage in general was such that no bird, not very much above their own size could terrify them; their swiftness so great, that scarcely any bird could escape them; and their docility so remarkable, that they obeyed not only the commands but the signs of their master. They remained quietly perched upon his hand till their game was flushed, or else kept hovering round his head, without ever leaving him

but when he gave permission. The common falcon is a bird of such spirit, that, like a conqueror in a country, he keeps all birds in awe and in subjection to his prowess. When he is seen flying wild, as I often had an opportunity of observing, the birds of every kind, that seemed entirely to disregard the kite or the sparrow-hawk, fly with screams at his most distant appearance. Long before I could see the falcon, I have seen them, with the utmost signs of terror, endeavouring to avoid him; and, like the peasants of a country before a victorious army, every one of them attempting to shift for himself. Even the young falcons, though their spirits be depressed by captivity, will, when brought out into the field, venture to fly at barnacles and wild geese, till being soundly brushed and beaten by those strong birds, they learn their error and desist from meddling with such unwieldy game for the future.

To train up the hawk to this kind of obedience, so as to hunt for his master, and bring him the game he shall kill, requires no small degree of skill and assiduity. Numberless treatises have been written upon this subject, which are now, with the sport itself, almost utterly forgotten: indeed, except to a few, they seem utterly unintelligible; for the falconers had a language peculiar to themselves, in which they conversed and wrote, and took a kind of professional pride in using no other. A modern reader, I suppose, would be little edified by one of the instructions, for instance, which we find in Willoughby, when he bids us *draw our falcon out of the mew twenty days before we enseam her. If she truss and carry, the remedy is, cosse her talons, her powse, and petty single.*

But, as it certainly makes a part of natural history to show how much the nature of birds can be wrought upon by harsh or kind treatment, I will just

take leave to give a short account of the manner of training a hawk, devested of those cant words with which men of art have thought proper to obscure their profession.

In order to train up a falcon, the master begins by clapping on straps upon his legs, which are called *jesses*, to which there is fastened a ring with the owner's name, by which, in case he should be lost, the finder may know where to bring him back. To these also are added little bells, which serve to mark the place where he is, if lost in the chase. He is always carried on the fist, and is obliged to keep without sleeping. If he be stubborn, and attempt to bite, his head is plunged into water. Thus by hunger, watching, and fatigue, he is constrained to submit to having his head covered by a hood or cowl, which covers his eyes. This troublesome employment continues often for three days and nights without ceasing. It rarely happpens but at the end of this his necessities, and the privation of light, make him lose all idea of liberty, and bring down his natural wildness. His master judges of his being tamed when he permits his head to be covered without resistance, and when uncovered, he seizes the meat before him contentedly. The repetition of these lessons by degrees ensures success. His wants being the chief principle of his dependence, it is endeavoured to increase his appetite, by giving him little balls of flannel, which he greedily swallows. Having thus excited the appetite, care is taken to satisfy it; and thus gratitude attaches the bird to the man who but just before had been his tormentor.

When the first lessons have succeeded, and the bird shows signs of docility, he is carried out upon some green, the head is uncovered, and, by flattering him with food at different times, he is taught to jump on the fist, and to continue there. When con-

firmed in this habit, it is then thought time to make him acquainted with the lure. This lure is only a thing stuffed like the bird the falcon is designed to pursue, such as a heron, a pigeon, or a quail, and on this lure they always take care to give him his food. It is quite necessary that the bird should not only be acquainted with this, but fond of it, and delicate in his food when shown it. When the falcon has flown upon this, and tasted the first morsel, some falconers then take it away; but by this there is a danger of daunting the bird, and the surest method is, when he flies to seize it, to let him feed at large, and this serves as a recompense for his docility. The use of this lure is to flatter him back when he has flown in the air, which it sometimes fails to do; and it is always requisite to assist it by the voice and the signs of the master. When these lessons have been long repeated, it is then necessary to study the character of the bird; to speak frequently to him if he be inattentive to the voice; to stint in his food such as do not come kindly or readily to the lure; to keep waking him if he be not sufficiently familiar; and to cover him frequently with the hood if he fears darkness. When the familiarity and the docility of the bird are sufficiently confirmed on the green, he is then carried into the open fields, but still kept fast by a string which is about twenty yards long. He is then uncovered as before; and the falconer calling him at some paces distance, shows him the lure. When he flies upon it, he is permitted to take a large morsel of the food which is tied to it. The next day the lure is shown him at a greater distance, till he comes at last to fly to it at the utmost length of his string. He is then to be shown the game itself alive, but disabled or tame, which he is designed to pursue. After having seized this several times with his string, he is then left entirely at liberty, and carried

into the field for the purpose of pursuing that which is wild. At that he flies with avidity; and when he has seized it, or killed it, he is brought back by the voice and the lure.

By this method of instruction, a hawk may be taught to fly at any game whatsoever; but falconers have chiefly confined their pursuit only to such animals as yield them profit by the capture, or pleasure in the pursuit. The hare, the partridge, and the quail, repay the trouble of taking them, but the most delightful sport is the falcon's pursuit of the heron, the kite, or the wood-lark. Instead of flying directly forward, as some other birds do, these, when they see themselves threatened by the approach of the hawk, immediately take to the skies. They fly almost perpendicularly upward, while their ardent pursuer keeps pace with their flight and tries to rise above them. Thus both diminish by degrees, from the gazing spectator below, till they are quite lost in the clouds; but they are soon seen descending, struggling together, and using every effort on both sides, the one of rapacious insult, the other of desperate defence. The unequal combat is soon at an end: the falcon comes off victorious, and, the other, killed, or disabled, is made a prey either to the bird or the sportsman.

As for other birds, they are not so much pursued, as they generally fly straight forward, by which the sportsman loses sight of the chase, and what is still worse, runs a chance of losing his falcon also. The pursuit of the lark by a couple of merlins is considered, to him only who regards the sagacity of the chase, as one of the most delightful spectacles this exercise can afford. The amusement is, to see one of the merlins climbing to get the ascendant of the lark, while the other, lying low for the best advantage, waits the success of its companion's efforts;

thus while the one stoops to strike its prey, the other seizes it at its coming down.

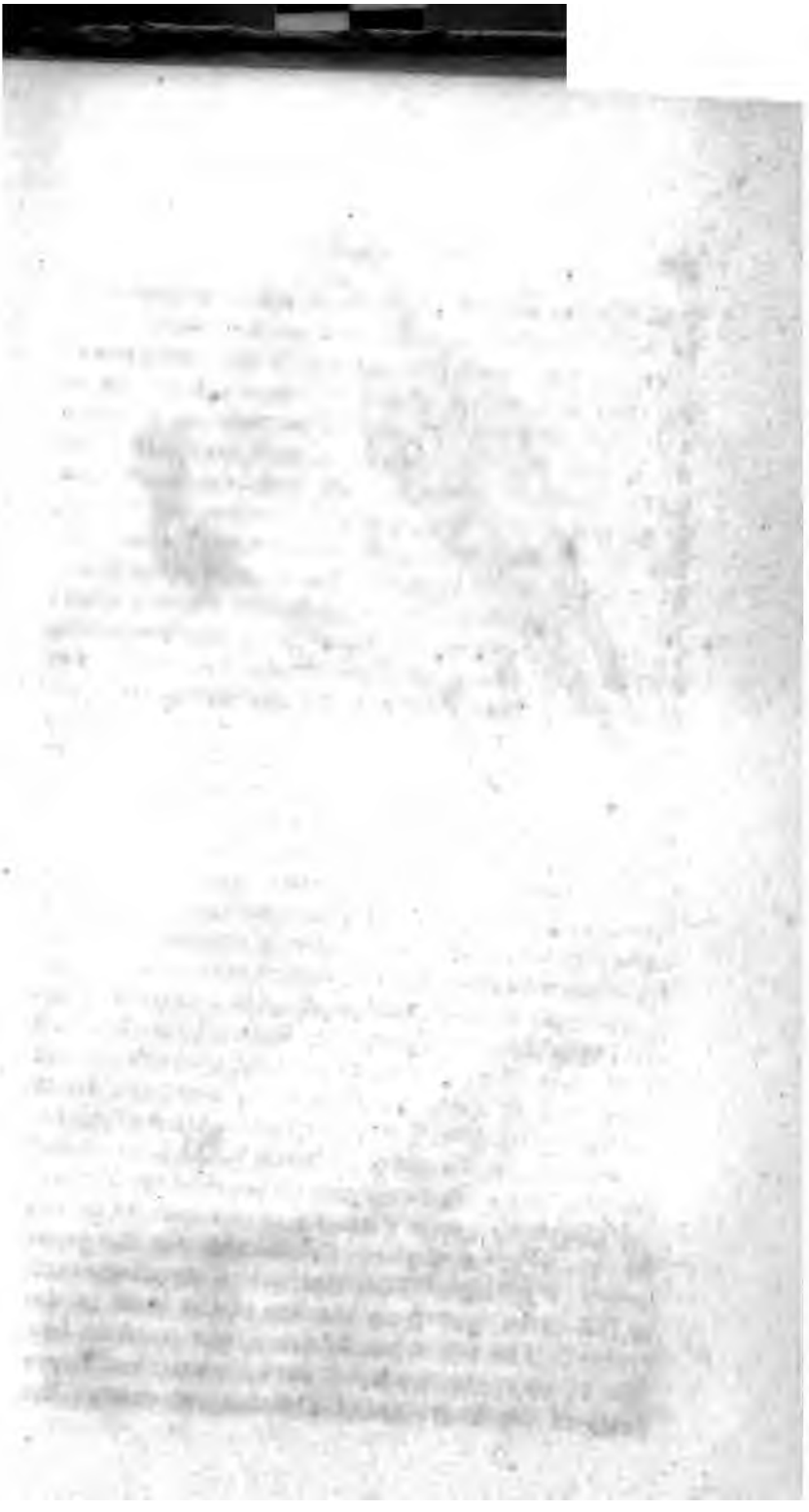
Such are the natural and acquired habits of these birds, which of all others have the greatest strength and courage relative to their size. While the kite or the goss-hawk approach their prey side-wise, these dart perpendicularly, in their wild state, upon their game, and devour it on the spot, or carry it off, if not too large for their power of flying. They are sometimes seen descending perpendicularly from the clouds, from an amazing height, and darting down on their prey with inevitable swiftness and destruction.

The more ignoble race of birds make up by cunning and assiduity what these claim by force and celerity. Being less courageous, they are more patient; and having less swiftness, they are better skilled at taking their prey by surprise. The kite, that may be distinguished from all the rest of this tribe by his forky tail and his slow floating motion, seems almost for ever upon the wing. He appears to rest himself upon the bosom of the air, and not to make the smallest effort in flying. He lives only upon accidental carnage, as almost every bird in the air is able to make good its retreat against him. He may be, therefore, considered as an insidious thief, who only prowls about, and when he finds a small bird wounded, or a young chicken strayed too far from the mother, instantly seizes the hour of calamity, and, like a famished glutton, is sure to show no mercy. His hunger, indeed, often urges him to acts of seeming desperation. I have seen one of them fly round and round for a while to mark a clutch of chickens, and then on a sudden dart like lightning upon the unresisting little animal, and carry it off, the hen in vain crying out, and the boys hooting and casting stones to scare him from his plunder.

For this reason, of all birds the kite is the good housewife's greatest tormentor and aversion.

Of all obscene birds, the kite is the best known; but the buzzard among us is the most plenty. He is a sluggish inactive bird, and often remains perched whole days together upon the same bough. He is rather an assassin than a pursuer; and lives more upon frogs, mice, and insects, which he can easily seize, than upon birds which he is obliged to follow. He lives in summer by robbing the nests of other birds, and sucking their eggs, and more resembles the owl kind in his countenance than any other rapacious bird of day. His figure implies the stupidity of his disposition; and so little is he capable of instruction from man, that it is common to a proverb to call one who cannot be taught, or continues obstinately ignorant, *a buzzard*. The honey-buzzard, the moor-buzzard, and the hen-harrier, are all of this stupid tribe, and differ chiefly in their size, growing less in the order I have named them. The goss-hawk and sparrow-hawk are what Mr. Willoughby calls short-winged birds, and consequently unfit for training, however injurious they may be to the pigeon-house or the sportsman. They have been indeed taught to fly at game; but little is to be obtained from their efforts, being difficult of instruction, and capricious in their obedience. It has been lately asserted, however, by one whose authority is respectable, that the sparrow-hawk is the boldest and the best of all others for the pleasure of the chase.

[The *Secretary* is a most singular species of the falcon, being particularly remarkable for the great length of its legs. This bird, when standing erect, is full three feet from the top of the head to the ground. The bill is black, sharp, and crooked, like that of an eagle; the head, neck, breast, and upper parts of the body, are of a bluish ash-colour; the



1. Swallow tailed Falcon — 2. Malabar Shrike
3. Horned Owl — 4. Butcher Bird?

legs are very long, stouter than those of a heron, and of a brown colour; claws shortish, but crooked, not very sharp, and of a black colour. From the hind-head springs a number of long feathers, which hang loose behind like a pendent crest: these feathers arise by pairs, and are longer as they are lower down on the neck. This crest the bird can erect at pleasure; it is of a dark colour, almost black; the webs are equal on both sides, and rather curled; and the feathers, when erected, somewhat incline towards the neck: the two middle feathers of the tail are twice as long as any of the rest.

This curious bird inhabits the internal parts of Africa, and is frequently seen at the Cape of Good Hope; it is also met with in the Philippine islands. It principally feeds on rats, lizards, and snakes, and as it is easily domesticated, it might thus be rendered useful. At the Cape of Good Hope it is called the *snake-eater*. Dr. Solander has seen one of these birds take up a snake or small tortoise in its claws, when dashing it from thence against the ground with great violence, if the victim was not killed at first, it repeated the operation till that end was answered: after which it ate it up quietly.]

CHAPTER XIII.

THE BUTCHER-BIRD.

Before I conclude this short history of rapacious birds that prey by day, I must take leave to describe a tribe of smaller birds, that seem from their size rather to be classed with the harmless order of the sparrow kind, but that from their crooked beak, courage, and appetite for slaughter, certainly deserve

a place here. The lesser Butcher-Bird is not much above the size of a lark; that of the smallest species is not so big as a sparrow; yet, diminutive as these little animals are, they make themselves formidable to birds of four times their dimensions.

The greater Butcher-Bird is about as large as a thrush: its bill is black, an inch long, and hooked at the end. This mark, together with its carnivorous appetites, ranks it among the rapacious birds; at the same time that its legs and feet, which are slender, and its toes, formed somewhat differently from the former, would seem to make it the shade between such birds as live wholly upon flesh, and such as live chiefly upon insects and grain.

Indeed, its habits seem entirely to correspond with its conformation, as it is found to live as well upon flesh as upon insects, and thus to partake in some measure of a double nature. However, its appetite for flesh is the most prevalent, and it never takes up with the former when it can obtain the latter. This bird, therefore, leads a life of continual combat and opposition. As from its size it does not much terrify the smaller birds of the forest, so it very frequently meets birds willing to try its strength, and it never declines the engagement.

It is wonderful to see with what intrepidity this little creature goes to war with the pie, the crow, and the kestril, all above four times bigger than itself, and that sometimes prey upon flesh in the same manner. It not only fights upon the defensive, but often comes to the attack, and always with advantage, particularly when the male and female unite to protect their young, and to drive away the more powerful birds of rapine. At that season they do not wait the approach of their invader, it is sufficient that they see him preparing for the assault at a distance. It is then that they sally forth with loud cries.

wound him on every side, and drive him off with such fury, that he seldom ventures to return to the charge. In these kinds of disputes they generally come off with the victory, though it sometimes happens that they fall to the ground with the bird they have so fiercely fixed upon, and the combat ends with the destruction of the assailant as well as the defender.

For this reason, the most redoubtable birds of prey respect them; while the kite, the buzzard, and the crow, seem rather to fear than seek the engagement. Nothing in nature better displays the respect paid to the claims of courage, than to see this little bird, apparently so contemptible, fly in company with the lanner, the falcon, and all the tyrants of the air, without fearing their power, or avoiding their resentment.

As for small birds, they are its usual food. It seizes them by the throat, and strangles them in an instant. When it has thus killed the bird or insect, it is asserted by the best authority, that it fixes them upon some neighbouring thorn, and when thus spitted, pulls them to pieces with its bill. It is supposed that as nature has not given this bird strength sufficient to tear its prey to pieces with its feet, as the hawks do, it is obliged to have recourse to this extraordinary expedient.

During summer such of them as constantly reside here, (for the smaller red butcher-bird migrates,) remain among the mountainous parts of the country; but in winter they descend into the plains, and nearer human habitations. The larger kind make their nests on the highest trees, while the lesser build in bushes in the fields and hedge-rows. They both lay about six eggs, of a white colour, but encircled at the bigger end with a ring of brownish-red. The nest on the outside is composed of white

moss interwoven with long grass; within, it is well lined with wool, and is usually fixed among the forking branches of a tree. The female feeds her young with caterpillars and other insects while very young; but soon after accustoms them to flesh, which the male procures with surprising industry. Their nature also is very different from other birds of prey in their parental care; for, so far from driving out their young from the nest to shift for themselves, they keep them with care; and even when adult they do not forsake them, but the whole brood live in one family together. Each family lives apart, and is generally composed of the male, female, and five or six young ones: these all maintain peace and subordination among each other, and hunt in concert. Upon the returning season of courtship this union is at an end; the family parts for ever, each to establish a little household of its own. It is easy to distinguish these birds at a distance, not only from their going in companies, but also from their manner of flying, which is always up and down, seldom direct or side-wise.

Of these birds there are three or four different kinds; but the greater ash-coloured butcher-bird is the least known among us. The red-backed butcher-bird migrates in autumn, and does not return till spring. The wood-chat resembles the former, except in the colour of its back, which is brown, and not red as in the other. There is still another, less than either of the former, found in the marshes near London. This too is a bird of prey, although not much bigger than a titmouse; an evident proof that an animal's courage or rapacity does not depend upon its size. Of foreign birds of this kind there are several; but as we know little of their manner of living, we will not, instead of history, substitute mere description. In fact, the colours of a bird,

which is all we know of them, would afford a reader but small entertainment in the enumeration. Nothing can be more easy than to fill volumes with the different shades of a bird's plumage; but these accounts are written with more pleasure than they are read, and a single glance of a good plate or a picture, imprints a juster idea than a volume could convey.

CHAPTER XIV.

OF RAPACIOUS BIRDS OF THE OWL KIND, THAT PREY BY NIGHT.

HITHERTO we have been describing a tribe of animals, who, though plunderers among their fellows of the air, yet wage war boldly in the face of day. We now come to a race equally cruel and rapacious, but who add to their savage disposition the further reproach of treachery, and carry on all their depredations by night.

All birds of the owl kind may be considered as nocturnal robbers, who, unfitted for taking their prey while it is light, surprise it at those hours of rest when the tribes of nature are in the least expectation of an enemy. Thus there seems no link in nature's chain broken; no where a dead inactive repose; but every place, every season, every hour of the day and night, is bustling with life, and furnishing instances of industry, self-defence, and invasion.

All birds of the owl kind have one common mark, by which they are distinguished from others; their eyes are formed for seeing better in the dusk than in the broad glare of sunshine. As in the eyes of tigers and cats, that are formed for a life of noctur-

nal depredation, there is a quality in the retina that takes in the rays of light so copiously as to permit their seeing in places almost quite dark; so in these birds there is the same conformation of that organ; and though, like us, they cannot see in a total exclusion of light, yet they are sufficiently quick-sighted at times when we remain in total obscurity. In the eyes of all animals nature hath made a complete provision, either to shut out too much light, or to admit a sufficiency, by the contraction and dilatation of the pupil. In these birds the pupil is capable of opening very wide, or shutting very close: by contracting the pupil, the brighter light of the day, which would act too powerfully upon the sensibility of the retina, is excluded; by dilating the pupil, the animal takes in the more faint rays of the night, and thereby is enabled to spy its prey, and catch it with greater facility in the dark. Beside this, there is an irradiation on the back of the eye, and the very iris itself has a faculty of reflecting the rays of light, so as to assist vision in the gloomy places where these birds are found to frequent.

But though owls are dazzled by too bright a daylight, yet they do not see best in the darkest nights, as some have been apt to imagine. It is in the dusk of the evening, or the gray of the morning, that they are best fitted for seeing—at those seasons when there is neither too much light, nor too little. It is then that they issue from their retreats to hunt or to surprise their prey, which is usually attended with great success; it is then that they find all other birds asleep, or preparing for repose, and they have only to seize the most unguarded.

The nights when the moon shines are the times of their most successful plunder; for when it is wholly dark, they are less qualified for seeing and pursuing their prey: except, therefore, by moon-light,

they contract the hours of their chase; and if they come out at the approach of dusk in the evening, they return before it is totally dark, and then rise by twilight the next morning, to pursue their game, and to return, in like manner, before the broad daylight begins to dazzle them with its splendour.

Yet the faculty of seeing in the night, or of being entirely dazzled by day, is not alike in every species of these nocturnal birds: some see by night better than others; and some are so little dazzled by daylight, that they perceive their enemies and avoid them. The common White or Barn Owl, for instance, sees with such exquisite acuteness in the dark, that though the barn has been shut at night, and the light thus totally excluded, yet it perceives the smallest mouse that peeps from its hole: on the contrary, the Brown Horn Owl is often seen to prowl along the hedges by day, like the sparrow-hawk; and sometimes with good success.

All birds of the owl kind may be divided into two sorts; those that have horns, and those without. These horns are nothing more than two or three feathers that stand up on each side of the head over the ear, and give this animal a kind of horned appearance. Of the horned kind is the Great Horned Owl, which at first view appears as large as an eagle. When he comes to be observed more closely, however, he will be found much less. His legs, body, wings, and tail, are shorter; his head much larger and thicker; his horns are composed of feathers that rise above two inches and a half high, and which he can erect or depress at pleasure; his eyes are large and transparent, encircled with an orange-coloured iris; his ears are large and deep, and it would appear that no animal is possessed with a more exquisite sense of hearing; his plumage is of a reddish-brown, marked on the back with black and yellow spots, and yellow only upon the belly.

Next to this is the Common Horned Owl, of a much smaller size than the former, and with horns much shorter. As the great owl was five feet from the tip of one wing to the other, this is but three. The horns are but about an inch long, and consist of six feathers, variegated with black and yellow.

There is still a smaller kind of the horned owl, which is not much larger than a blackbird; and whose horns are remarkably short, being composed but of one feather, and that not above half an inch high.

To these succeeds the tribe without horns. The Howlet, which is the largest of this kind, with dusky plumes, and black eyes; the Screech-owl, of a smaller size, with blue eyes, and plumage of an iron-gray; the White Owl, about as large as the former, with yellow eyes, and whitish plumage; the Great Brown Owl, less than the former, with brown plumage, and a brown beak; and lastly, the Little Brown Owl, with yellowish-coloured eyes, and an orange-coloured bill. To this catalogue might be added others of foreign denominations, which differ but little from our own, if we except the Harfang, or Great Hudson's Bay Owl of Edwards, which is the largest of all the nocturnal tribe, and as white as the snows of the country of which he is a native.

All this tribe of animals, however they may differ in their size and plumage, agree in their general characteristics of preying by night, and having their eyes formed for nocturnal vision. Their bodies are strong and muscular; their feet and claws made for tearing their prey; and their stomachs for digesting it. It must be remarked, however, that the digestion of all birds that live upon mice, lizards, or such like food, is not very perfect; for though they swallow them whole, yet they are always seen some time after to disgorge the skin and bones, rolled up in a pellet, as being indigestible.

In proportion as each of these animals bears the day-light best, he sets forward earlier in the evening in pursuit of his prey. The great horned owl is the foremost in leaving his retreat, and ventures into the woods and thickets very soon in the evening. The horned and the brown owl are later in their excursions; but the barn owl seems to see best in profound darkness, and seldom leaves his hiding-place till midnight.

As they are incapable of supporting the light of the day, or at least of then seeing and readily avoiding their danger, they keep all this time concealed in some obscure retreat, suited to their gloomy appetites, and there continue in solitude and silence. The cavern of a rock, the darkest part of a hollow tree, the battlements of a ruined and unfrequented castle, some obscure hole in a farmer's out-house, are the places where they are usually found: if they be seen out of these retreats in the day-time, they may be considered as having lost their way, as having by some accident been thrown into the midst of their enemies, and surrounded with danger.

Having spent the day in their retreat, at the approach of evening they sally forth, and skim rapidly up and down along the hedges. The barn owl. indeed, who lives chiefly upon mice, is contented to be more stationary: he takes his residence upon some shock of corn, or the point of some old house, and there watches in the dark, with the utmost perspicacity and perseverance.

Nor are these birds by any means silent; they all have a hideous note, which, while pursuing their prey, is seldom heard, but may be considered rather as a call to courtship. There is something always terrifying in this call, which is often heard in the silence of midnight, and breaks the general pause with a horrid variation. It is different in all, but in

each it is alarming and disagreeable. Father Kircher, who has set the voices of birds to music, has given all the tones of the owl note, which makes a most tremendous melody. Indeed, the prejudices of mankind are united with their sensations to make the cry of the owl disagreeable. The screech-owl's voice was always considered among the people as a presage of some sad calamity that was soon to ensue.

They seldom, however, are heard while they are preying; that important pursuit is always attended with silence, as it is by no means their intention to disturb or forewarn those little animals they wish to surprise. When their pursuit has been successful, they soon return to their solitude, or to their young, if that be the season. If, however, they find but little game, they continue their quest still longer; and it sometimes happens, that, obeying the dictates of appetite rather than of prudence, they pursue so long that broad day breaks in upon them, and leaves them dazzled, bewildered, and at a distance from home.

In this distress, they are obliged to take shelter in the first tree or hedge that offers, there to continue concealed all day, till the returning darkness once more supplies them with a better plan of the country. But it too often happens, that, with all their precaution to conceal themselves, they are spied out by the other birds of the place, and are sure to receive no mercy. The blackbird, the thrush, the jay, the bunting, and the red-breast, all come in file, and employ their little arts of insult and abuse. The smallest, the feeblest, and the most contemptible of this unfortunate bird's enemies are then the foremost to injure and torment him. They increase their cries and turbulence round him, flap him with their wings, and are ready to show their courage to be-

great, as they are sensible that their danger is but small. The unfortunate owl, not knowing where to attack or where to fly, patiently sits and suffers all their insults. Astonished and dizzy, he only replies to their mockeries by awkward and ridiculous gestures, by turning his head, and rolling his eyes with an air of stupidity. It is enough that an owl appears by day to set the whole grove into a kind of uproar. Either the aversion all the small birds have to this animal, or the consciousness of their own security, makes them pursue him without ceasing, while they encourage each other by their mutual cries to lend assistance in this laudable undertaking.

It sometimes happens, however, that the little birds pursue their insults with the same imprudent zeal with which the owl himself had pursued his depredations. They hunt him the whole day until evening returns, which restoring him his faculties of sight once more, he makes the foremost of his pursuers pay dear for their former sport. Nor is man always an unconcerned spectator here. The bird-catchers have got an art of counterfeiting the cry of the owl exactly; and, having before limed the branches of a hedge, they sit unseen and give the call. At this, all the little birds flock to the place where they expect to find their well-known enemy; but instead of finding their stupid antagonist, they are stuck fast to the hedge themselves. This sport must be put in practice an hour before night-fall, in order to be successful; for if it is put off till later, those birds which but a few minutes sooner came to provoke their enemy, will then fly from him with as much terror as they just before showed insolence.

It is not unpleasant to see one stupid bird made in some sort a decoy to deceive another. The great horned owl is sometimes made use of for this pur-

pose to lure the kite, when falconers desire to catch him for the purposes of training the falcon. Upon this occasion they clap the tail of a fox to the great owl, to render his figure extraordinary; in which trim he sails slowly along, flying low, which is his usual manner. The kite, either curious to observe this odd kind of animal, or perhaps inquisitive to see whether it may not be proper for food, flies after, and comes nearer and nearer. In this manner he continues to hover, and sometimes to descend, till the falconer setting a strong-winged hawk against him, seizes him for the purpose of training his young ones at home.

The usual place where the great horned owl breeds is in the cavern of a rock, the hollow of a tree, or the turret of some ruined castle. Its nest is near three feet in diameter, and composed of sticks, bound together by the fibrous roots of trees, and lined with leaves on the inside. It lays about three eggs, which are larger than those of a hen, and of a colour somewhat resembling the bird itself. The young ones are very voracious, and the parents not less expert at satisfying the call of hunger. The lesser owl of this kind never makes a nest for itself, but always takes up with the old nest of some other bird, which it has often been forced to abandon. It lays four or five eggs; and the young are all white at first, but change colour in about a fortnight. The other owls in general build near the place where they chiefly prey: that which feeds upon birds, in some neighbouring grove; that which preys chiefly upon mice, near some farmer's yard, where the proprietor of the place takes care to give it perfect security. In fact, whatever mischief one species of owl may do in the woods, the barn owl makes a sufficient recompense for, by being equally active in destroying mice nearer home; so that a single owl

is said to be more serviceable than half a dozen cats in ridding the barn of its domestic vermin. "In the year 1580," says an old writer, "at Hallontide, an army of mice so overrun the marshes near Southminster, that they eat up the grass to the very roots. But at length a great number of strange painted owls came and devoured all the mice. The like happened again in Essex about sixty years after."

To conclude our account of these birds, they are all very shy of man, and extremely indocile and difficult to be tamed. The white owl in particular, as M. Buffon asserts, cannot be made to live in captivity; I suppose he means if it be taken when old. "They live, says he, "ten or twelve days in the aviary where they are shut up; but they refuse all kind of nourishment, and at last die of hunger. By day they remain without moving from the floor of the aviary, in the evening, they mount on the highest perch, where they continue to make a noise like a man snoring with his mouth open. This seems designed as a call for their old companions without; and in fact, I have seen several others come to the call, and perch upon the roof of the aviary, where they made the same kind of hissing, and soon after permitted themselves to be taken in a net."

PART II.

OF BIRDS OF THE POULTRY KIND.

CHAPTER I.

OF BIRDS OF THE POULTRY KIND IN GENERAL.

From the most rapacious and noxious tribe of birds, we make a transition to those which of all others are the most harmless and the most serviceable to man. He may force the rapacious tribes to assist his pleasures in the field, or induce the smaller warblers to delight him with their singing; but it is from the poultry kind that he derives the most solid advantages, as they not only make a considerable addition to the necessaries of life, but furnish out the greatest delicacies to every entertainment.

Almost, if not all the domestic birds of the poultry kind that we maintain in our yards are of foreign extraction; but there are others to be ranked in this class that are as yet in a state of nature, and perhaps only wait till they become sufficiently scarce to be taken under the care of man to multiply their propagation. It will appear remarkable enough, if we consider how much the tame poultry which we have imported from distant climates has increased, and how much those wild birds of the poultry kind that have never yet been taken into keeping have been diminished and destroyed. They are all thinned; and many of the species, especially in the more cultivated and populous parts of the kingdom, are utterly unseen.

Under birds of the poultry kind I rank all those that have white flesh, and, comparatively to their head and limbs, have bulky bodies. They are furnished with short strong bills for picking up grain, which is their chief and often their only sustenance. Their wings are short and concave, for which reason they are not able to fly far. They lay a great many eggs; and as they lead their young abroad the very day they are hatched in quest of food, which they are shown by the mother, and which they pick up for themselves, they generally make their nests on the ground. The toes of all these are united by a membrane as far as the first articulation, and then are divided as in those of the former class.

Under this class we may therefore rank the common cock, the peacock, the turkey, the pintada or Guinea-hen, the pheasant, the bustard, the grouse, the partridge, and the quail. These all bear a strong similitude to each other, being equally granivorous, fleshy, and delicate to the palate. These are among birds what beasts of pasture are among quadrupeds, peaceable tenants of the field, and shunning the thicker part of the forest, that abounds with numerous animals who carry on unceasing hostilities against them.

As nature has formed the rapacious class for war, so she seems equally to have fitted these for peace, rest, and society. Their wings are but short, so that they are ill formed for wandering from one region to another; their bills are also short, and incapable of annoying their opposers: their legs are strong indeed, but their toes are made for scratching up their food, and not for holding or tearing it. These are sufficient indications of their harmless nature; while their bodies, which are fat and fleshy, render them unwieldy travellers, and incapable of straying far from each other.

Accordingly we find them chiefly in society: they live together; and though they may have their disputes, like all other animals, upon some occasions, yet, when kept in the same district, or fed in the same yard, they learn the arts of subordination, and in proportion as each knows his strength, he seldom tries a second time the combat where he has once been worsted.

In this manner, all of this kind seem to lead an indolent voluptuous life: as they are furnished internally with a very strong stomach, commonly called a *gizzard*, so their voraciousness scarcely knows any bounds. If kept in close captivity, and separated from all their former companions, they still have the pleasure of eating left; and they soon grow fat and unwieldy in their prison. To say this more simply, many of the wilder species of birds, when cooped or caged, pine away, grow gloomy, and some refuse all sustenance whatever; none, except those of the poultry kind, grow fat, who seem to lose all remembrance of their former liberty, satisfied with indolence and plenty.

The poultry kind may be considered as sensual epicures, solely governed by their appetites. The indulgence of these seems to influence their other habits, and destroys among them that connubial fidelity for which most other kinds are remarkable. The eagle and the falcon, how fierce soever to other animals, are yet gentle and true to each other: their connexions when once formed continue till death; and the male and female in every exigence and every duty lend faithful assistance to each other. They assist each other in the production of their young, in providing for them when produced, and, even then, though they drive them forth to fight their own battles, yet the old ones still retain their former affection to each other, and seldom part far asunder.

But it is very different with this luxurious class I am now describing. Their courtship is but short, and their congress fortuitous. The male takes no heed of his offspring, and, satisfied with the pleasure of getting, leaves to the female all the care of providing for posterity. Wild and irregular in his appetites, he ranges from one to another, and claims every female which he is strong enough to keep from his fellows. Though timorous when opposed to birds of prey, yet he is incredibly bold among those of his own kind, and but to see a male of his own species is sufficient to produce a combat. As his desires extend to all, every creature becomes his enemy that pretends to be his rival.

The female, equally without fidelity or attachment, yields to the most powerful. She stands by, a quiet meretricious spectator of their fury, ready to reward the conqueror with every compliance. She takes upon herself all the labour of hatching and bringing up her young, and chooses a place for hatching as remote as possible from the cock. Indeed, she gives herself very little trouble in making a nest, as her young ones are to forsake it the instant they part from the shell.

She is equally unassisted in providing for her young, which are not fed with meat put into their mouths, as in other classes of the feathered kind, but peck their food, and, forsaking their nests, run here and there, following the parent wherever it is to be found. She leads them forward where they are likely to have the greatest quantity of grain, and takes care to show, by pecking, the sort proper for them to seek for. Though at other times voracious, she is then abstemious to an extreme degree; and, intent only on providing for and showing her young clutch their food, she scarcely takes any nourishment herself. Her parental pride seems to over-

power every other appetite; but that decreases in proportion as her young ones are more able to provide for themselves, and then all her voracious habits return.

Among the other habits peculiar to this class of birds, is that of dusting themselves. They lie flat in some dusty place, and with their wings and feet raise and scatter the dust over their whole body. What may be their reason for thus doing, it is not easy to explain. Perhaps the heat of their bodies is such, that they require this powder to be interposed between their feathers to keep them from lying too close together, and thus increasing that heat with which they are incommoded.

CHAPTER II.

OF THE COCK.

ALL birds taken under the protection of man lose a part of their natural figure, and are altered not only in their habits, but their very form. Climate, food, and captivity, are three very powerful agents in producing these alterations; and those birds that have longest felt their influence under human direction, are the most likely to have the greatest variety in their figures, their plumage, and their dispositions.

Of all other birds, the cock seems to be the oldest companion of mankind, to have been first reclaimed from the forest, and taken to supply the accidental failure of the luxuries or necessaries of life. As he is thus longest under the care of man, so of all others perhaps he exhibits the greatest number of varieties, there being scarce two birds of this species that ex-

actly resemble each other in plumage and form. The tail, which makes such a beautiful figure in the generality of these birds, is yet found entirely wanting in others; and not only the tail, but the rump also. The toes, which are usually four in all animals of the poultry kind, yet in a species of the cock are found to amount to five. The feathers, which lie so sleek and in such beautiful order in most of those we are acquainted with, are in a peculiar breed all inverted, and stand staring the wrong way. Nay, there is a species that comes from Japan, which instead of feathers seems to be covered over with hair. These and many other varieties are to be found in this animal, which seem to be the marks this early prisoner bears of his long captivity.

It is not well ascertained when the cock was first made domestic in Europe, but it is generally agreed that we first had him in our western world from the kingdom of Persia. Aristophanes calls the cock the Persian bird, and tells us he enjoyed that kingdom before some of its earliest monarchs. This animal was in fact known so early, even in the most savage parts of Europe, that we are told the cock was one of the forbidden foods among the ancient Britons. Indeed, the domestic fowl seems to have banished the wild one. Persia itself, that first introduced it to our acquaintance, seems no longer to know it in its natural form; and if we did not find it wild in some of the woods of India, as well as those of the islands in the Indian Ocean, we might begin to doubt, as we do with regard to the sheep, in what form it first existed in a state of nature.

But those doubts no longer exist: the cock is found in the island of Tinian, in many others of the Indian Ocean, and in the woods on the coast of Malabar, in his ancient state of independence. In his wild condition, his plumage is black and yellow, and his

comb and wattles yellow and purple. There is another peculiarity also in those of the Indian woods; their bones, which when boiled with us are white, as every body knows, in those are as black as ebony. Whether this tincture proceeds from their food, as the bones are tinctured red by feeding upon madder, I leave to the discussion of others: satisfied with the fact, let us decline speculation.

In their first propagation in Europe, there were distinctions then that now subsist no longer. The ancients esteemed those fowls whose plumage was reddish as invaluable; but as for the white, it was considered as utterly unfit for domestic purposes. These they regarded as subject to become a prey to rapacious birds; and Aristotle thinks them less fruitful than the former. Indeed, his division of those birds seems to be taken from their culinary uses; the one sort he calls generous and noble, being remarkable for fecundity; the other sort, ignoble and useless, from their sterility. These distinctions differ widely from our modern notions of generosity in this animal; that which we call the *game-cock* being by no means so fruitful as the ungenerous dunghill-cock, which we treat with contempt. The Athenians had their cock matches as well as we; but it is probable they did not enter into our refinement of choosing out the most barren of the species for the purposes of combat.

However this be, no animal in the world has greater courage than the cock when opposed to one of his own species; and in every part of the world where refinement and polished manners have not entirely taken place, cock-fighting is a principal diversion. In China, India, the Philippine Islands, and all over the East, cock-fighting is the sport and amusement even of kings and princes. With us it is declining every day; and it is to be hoped it will in

time become only the pastime of the lowest vulgar. It is the opinion of many, that we have a bolder and more valiant breed than is to be found elsewhere; and some, indeed, have entered into a serious discussion upon the cause of so flattering a singularity. But the truth is, they have cocks in China as bold if not bolder than ours; and, what would still be considered as valuable among cockers here, they have more strength with less weight. Indeed, I have often wondered why men who lay two or three hundred pounds upon the prowess of a single cock, have not taken every method to improve the breed. Nothing it is probable, could do this more effectually than by crossing the *strain*, as it is called, by a foreign mixture; and whether having recourse even to the wild cock in the forests of India would not be useful, I leave to their consideration. However, it is a mean and ungenerous amusement, nor would I wish much to promote it. The truth is, I could give such instructions with regard to cock-fighting, and could so arm one of these animals against the other, that it would be almost impossible for the adversary's cock to survive the first or second blow; but as Boerhaave has said upon a former occasion, when he was treating upon poisons, "to teach the arts of cruelty is equivalent to committing them."

This extraordinary courage in the cock is thought to proceed from his being the most salacious of all other birds whatsoever. A single cock suffices for ten or a dozen hens; and it is said of him, that he is the only animal whose spirits are not abated by indulgence. But then he soon grows old; the radical moisture is exhausted; and in three or four years he becomes utterly unfit for the purposes of impregnation. "Hens also," to use the words of Willoughby, "as they for the greatest part of the year daily lay eggs, cannot suffice for so many births, but for the

most part after three years become effete and barren; for when they have exhausted all their seed-eggs, of which they had but a certain quantity from the beginning, they must necessarily cease to lay, there being no new ones generated within."

The hen seldom clutches a brood of chickens above once a season, though instances have been known in which they produced two. The number of eggs a domestic hen will lay in the year are above two hundred, provided she be well fed, and supplied with water and liberty. It matters not much whether she be trodden by the cock or no; she will continue to lay, although all the eggs of this kind can never by hatching be brought to produce a living animal. Her nest is made without any care, if left to herself; a hole scratched into the ground, among a few bushes, is the only preparation she makes for this season of patient expectation. Nature, almost exhausted by its own fecundity, seems to inform her of the proper time for hatching, which she herself testifies by a clucking note, and by discontinuing to lay. The good housewives, who often get more by their hens laying than by their chickens, artificially protract this clucking season, and sometimes entirely remove it. As soon as their hen begins to cluck, they stint her in her provisions; if that fails, they plunge her into cold water: this, for the time, effectually puts back her hatching, but then it often kills the poor bird, who takes cold and dies under the operation.

If left entirely to herself, the hen would seldom lay above twenty eggs in the same nest, without attempting to hatch them, but in proportion as she lays, her eggs are removed: and she continues to lay, vainly hoping to increase the number. In the wild state, the hen seldom lays above fifteen eggs; but then her provision is more difficultly obtained,

and she is perhaps sensible of the difficulty of maintaining too numerous a family.

When the hen begins to sit, nothing can exceed her perseverance and patience; she continues for some days immoveable, and when forced away by the importunities of hunger, she quickly returns. Sometimes also her eggs become too hot for her to bear, especially if she be furnished with too warm a nest within doors, for then she is obliged to leave them to cool a little: thus the warmth of the nest only retards incubation, and often puts the brood a day or two back in the shell. While the hen sits, she carefully turns her eggs, and even removes them to different situations; till at length, in about three weeks, the young brood begins to give signs of a desire to burst their confinement. When by the repeated efforts of their bill, which serves like a pioneer on this occasion, they have broke themselves a passage through the shell, the hen still continues to sit till all are excluded. The strongest and best chickens generally are the first candidates for liberty; the weakest come behind, and some even die in the shell. When all are produced, she then leads them forth to provide for themselves. Her affection and her pride seem then to alter her very nature, and correct her imperfections. No longer voracious or cowardly, she abstains from all food that her young can swallow, and flies boldly at every creature that she thinks is likely to do them mischief. Whatever the invading animal be, she boldly attacks him; the horse, the hog, or the mastiff. When marching at the head of her little troop, she acts the commander, and has a variety of notes to call her numerous train to their food, or to warn them of approaching danger. Upon one of these occasions, I have seen the whole brood run for security into the thickest part of a hedge, when the hen herself ventured boldly forth, and faced

a fox that came for plunder. With a good mastiff, however, we soon sent the invader back to his retreat; but not before he had wounded the hen in several places.

Ten or twelve chickens are the greatest number that a good hen can rear and clutch at a time; but as this bears no proportion to the number of her eggs, schemes have been imagined to clutch all the eggs of a hen, and thus turn her produce to the greatest advantage. By these contrivances it has been obtained, that a hen that ordinarily produces but twelve chickens in the year, is found to produce as many chickens as eggs, and consequently often above two hundred. The contrivance I mean is the artificial method of hatching chickens in stoves, as is practised at Grand Cairo; or in a chemical elaboratory properly graduated, as has been effected by M. Reaumur. At grand Cairo they thus produce six or seven thousand chickens at a time; where, as they are brought forth in their mild spring, which is warmer than our summer, the young ones thrive without clutching. But it is otherwise in our colder and unequal climate; the little animals may, without much difficulty be hatched from the shell, but they almost all perish when excluded. To remedy this, Reamur has made use of a woollen hen, as he calls it; which was nothing more than putting the young ones in a warm basket, and clapping over them a thick woollen canopy. I should think a much better substitute might be found, and this from among the species themselves. Capons may very easily be taught to clutch a fresh brood of chickens throughout the year; so that when one little colony is thus reared, another may be brought to succeed it. Nothing is more common than to see capons thus employed; and the manner of teaching them is this:—first the capon is made very tame, so as to feed from one's hand; then

about evening, they pluck the feathers off his breast, and rub the bare skin with nettles; they then put the chickens to him, which presently run under his breast and belly, and probably rubbing his bare skin gently with their heads, allay the stinging pain which the nettles had just produced. This is repeated for two or three nights, till the animal takes an affection to the chickens that have thus given him relief, and continues to give them the protection they seek for: perhaps also the querulous voice of the chickens may be pleasant to him in misery, and invite him to succour the distressed. He from that time brings up a brood of chickens like a hen, clutching them, feeding them, clucking and performing all the functions of the tenderest parent. A capon once accustomed to this service, will not give over; but when one brood is grown up, he may have another nearly hatched put under him, which he will treat with the same tenderness he did the former.

The cock, from his salaciousness, is allowed to be a short-lived animal; but how long these birds live, if left to themselves, is not yet well ascertained by any historian. As they are kept only for profit, and in a few years become unfit for generation, there are few that, from mere motives of curiosity, will make the tedious experiment of maintaining a proper number till they die. Aldrovandus hints their age to be ten years; and it is probable that this may be its extent. They are subject to some disorders, which it is not our business to describe; and as for poisons, besides nux vomica, which is fatal to most animals except man, they are injured, as Linnæus asserts, by elder-berries, of which they are not a little fond.

CHAPTER III.

OF THE PEACOCK.

THE Peacock, by the common people of Italy is said to have the plumage of an angel, the voice of a devil, and the guts of a thief. In fact each of these qualities mark pretty well the nature of this extraordinary bird. When it appears with its tail expanded, there is none of the feathered creation can vie with it for beauty; yet the horrid scream of its voice serves to abate the pleasure we find from viewing it; and still more, its insatiable gluttony and spirit of depredation make it one of the most noxious domestics that man has taken under his protection.

Our first peacocks were brought from the East Indies; and we are assured, that they are still found in vast flocks, in a wild state, in the Islands of Java and Ceylon. So beautiful a bird, and one esteemed such a delicacy at the tables of the luxurious, could not be permitted to continue long at liberty in its distant retreats. So early as the days of Solomon, we find in his navies, among the articles imported from the East, apes and peacocks. Ælian relates, that they were brought into Greece from some barbarous country, and were held in such high esteem among them, that a male and female were valued at above thirty pounds of our money. We are told also that when Alexander was in India, he found them flying wild in vast numbers on the banks of the river Hyarotis, and was so struck with their beauty that he laid a severe fine and punishment on all who should kill or disturb them. Nor are we to be surprised at this, as the Greeks were so much struck with the beauty of this bird, when first brought among them, that every person paid a fixed price for seeing it;

1. Peacock — 2. Wood Grous — 3. Quail — 4. Partridge.

and several people came to Athens, from Lacedæmon, and Thessaly, purely to satisfy their curiosity.

It was probably first introduced into the West merely on account of its beauty; but mankind, from contemplating its figure, soon came to think of serving it up for a different entertainment. Aufidius Hurco stands charged by Pliny with being the first who fatted up the peacock for the feasts of the luxurious. Whatever there may be of delicacy in the flesh of a young peacock, it is certain an old one is very indifferent eating; nevertheless, there is no mention made of choosing the youngest; it is probable they were killed indiscriminately, the beauty of the feathers in some measure stimulating the appetite. Hortensius the orator was the first who served them up at an entertainment at Rome; and from that time they were considered as one of the greatest ornaments of every feast. Whether the Roman method of cookery, which was much higher than ours, might not have rendered them more palatable than we find them at present, I cannot tell; but certain it is, they talk of the peacock as being the first of viands.

Its fame for delicacy, however, did not continue very long; for we find, in the times of Francis the First, that it was a custom to serve up peacocks to the tables of the great, with an intention not to be eaten, but only to be seen. Their manner was to strip off the skin, and then preparing the body with the warmest spices, they covered it up again in its former skin, with all its plumage in full display, and no way injured by the preparation. The bird, thus prepared, was often preserved for many years without corrupting; and it is asserted of the peacock's flesh, that it keeps longer unputrefied than that of any other animal. To give a higher zest to these entertainments, on weddings particularly, they filled

the bird's beak and throat with cotton and camphire, which they set on fire to amuse and delight the company. I do not know that the peacock is much used at our entertainments at present, except now and then at an alderman's dinner or a common-council feast, when our citizens resolve to be splendid; and even then it is never served with its cotton and camphire.

Like other birds of the poultry kind, the peacock feeds upon corn, but its chief predilection is for barley. But as it is a very proud and fickle bird, there is scarcely any food that it will not at times covet and pursue. Insects and tender plants are often eagerly sought at a time that it has a sufficiency of its natural food provided more nearly. In the indulgence of these capricious pursuits, walls cannot easily confine it; it strips the tops of houses of their tiles or thatch, it lays waste the labours of the gardener, roots up his choicest seeds, and nips his favourite flowers in the bud. Thus its beauty but ill recompenses for the mischief it occasions; and many of the more homely looking fowls are very deservedly preferred before it.

Nor is the peacock less a debauchee in its affections than a glutton in its appetites. He is still more salacious than even the cock; and though not possessed of the same vigour, yet burns with more immoderate desire. He requires five females at least to attend him; and if there be not a sufficient number, he will even run upon and tread the sitting hen. For this reason the pea-hen endeavours, as much as she can, to hide her nest from the male, as he would otherwise disturb her sitting, and break her eggs.

The pea-hen seldom lays above five or six eggs in this climate before she sits. Aristotle describes her as laying twelve; and it is probable, in her native climate, she may be thus prolific; for it is certain,

that in the forests where they breed naturally, they are numerous beyond expression. This bird lives about twenty years; and not till its third year has it that beautiful variegated plumage that adorns its tail.

"In the kingdom of Cambaya," says Taverner, "near the city of Baroch, whole flocks of them are seen in the fields. They are very shy, however, and it is impossible to come near them. They run off swifter than the partridge, and hide themselves in thickets, where it is impossible to find them. They perch, by night, upon trees; and the fowler often approaches them at that season with a kind of banner, on which a peacock is painted to the life, on either side. A lighted torch is fixed on the top of this decoy; and the peacock, when disturbed, flies to what it takes for another, and is thus caught in a noose prepared for that purpose."

There are varieties of this bird, some of which are white, others crested: that which is called the Peacock of Thibet, is the most beautiful of the feathered creation, containing in its plumage all the most vivid colours, red, blue, yellow, and green, disposed in an almost artificial order, as if merely to please the eye of the beholder.

CHAPTER IV.

THE TURKEY.

THE natal place of the cock and peacock is pretty well ascertained, but there are stronger doubts concerning the Turkey; some contending that it has been brought into Europe from the East Indies many centuries ago, while others assert that it is wholly unknown in that part of the world, that it is a na-

tive of the New Continent, and that it was not brought into Europe till the discovery of that part of the world.

Those who contend for the latter opinion very truly observe, that among all the descriptions we have of Eastern birds, that of the turkey is not to be found; while, on the contrary, it is very well known in the New Continent, where it runs wild about the woods. It is said by them to have been first seen in France in the reign of Francis the First, and in England in that of Henry the Eighth; which is about the time that Mexico was first conquered by Spain. On the other hand it is asserted, that the turkey, so far from being unknown in Europe before that time, was known even to the ancients, and that Ælian has given a pretty just description of it. They allege, that its very name implies its having been brought from some part of the East; and that it is found, among other dainties, served up to the tables of the great, before that time, among ourselves. But what they pretend to be the strongest proof is, that though the wild turkey be so very common in America, yet the natives cannot contrive to tame it; and though hatched in the ordinary manner, nothing can render it domestic. In this diversity of opinions, perhaps, it is best to suspend assent till more lights are thrown on the subject; however, I am inclined to concur with the former opinion.

With us when young, it is one of the tenderest of all birds; yet, in its wild state, it is found in great plenty in the forests of Canada, that are covered with snow above three parts of the year. In their natural woods, they are found much larger than in their state of domestic captivity. They are much more beautiful also, their feathers being of a dark gray bordered at the edges with a bright gold colour. These the savages of the country weave into

cloaks to adorn their persons, and fashion into fans and umbrellas, but never once think of taking into keeping animals that the woods furnish them with in sufficient abundance. Savage man seems to find a delight in precarious possession. A great part of the pleasure of the chase lies in the uncertainty of the pursuit, and he is unwilling to abridge himself in any accidental success that may attend his fatigues. The hunting the turkey, therefore, makes one of his principal diversions, as its flesh contributes chiefly to the support of his family. When he has discovered the place of their retreat, which in general is near fields of nettles, or where there is plenty of any kind of grain, he takes his dog with him, which is trained to the sport (a faithful rough creature, supposed to be originally reclaimed from the wolf,) and he sends him into the midst of the flock. The turkeys no sooner perceive their enemy, than they set off running at full speed, and with such swiftness, that they leave the dog far behind them: he follows, nevertheless, and sensible they must soon be tired, as they cannot go full speed for any length of time, he at last forces them to take shelter in a tree, where they sit, quite spent and fatigued, till the hunter comes up, and with a long pole knocks them down one after the other.

This manner of suffering themselves to be destroyed, argues no great instinct in the animal; and indeed, in their captive state, they do not appear to be possessed of much. They seem a stupid, vain, querulous tribe, apt enough to quarrel among themselves, yet without any weapons to do each other an injury. Every body knows the strange antipathy the turkey-cock has to a red colour, how he bristles, and with his peculiar gobbling sound, flies to attack it. But there is another method of increasing the animosity of these birds against each other, which is often

practised by boys when they have a mind for a battle. This is no more than to smear over the head of one of the turkeys with dirt, and the rest run to attack it with all the speed of impotent animosity; nay, two of them, thus disguised, will fight each other till they are almost suffocated with fatigue and anger.

But though so furious among themselves, they are weak and cowardly against other animals, though far less powerful than they. The cock often makes the turkey keep at a distance; and they seldom venture to attack him but with united force, when they rather oppress him by their weight than annoy him by their arms. There is no animal, how contemptible soever, that will venture boldly to face the turkey-cock, that he will not fly from. On the contrary, with the insolence of a bully, he pursues any thing that seems to fear him, particularly lap-dogs and children, against both which he seems to have a peculiar aversion. On such occasions, after he has made them scamper, he returns to his female train, displays his plumage around, struts about the yard and gobbles out a note of self-approbation.

The female seems of a milder, gentler disposition. Rather querulous than bold, she hunts about in quest of grain, and in pursuit of insects, being particularly delighted with the eggs of ants and caterpillars. She lays eighteen or twenty eggs, larger than those of a hen, whitish, but marked with spots resembling the freckles of the face. Her young are extremely tender at first, and must be carefully fed with curd chopped with dock leaves; but as they grow older, they become more hardy, and follow the mother to considerable distances, in pursuit of insect food, which they prefer to any other. On these occasions, however, the female, though so large, and as it would seem so powerful a bird, gives them but very little

protection against the attacks of any rapacious animal that comes in her way. She rather warns her young to shift for themselves, than prepares to defend them. "I have heard," says the Abbé la Pluche, "a turkey-hen, when at the head of her brood, send forth the most hideous scream, without knowing as yet the cause; however, her young immediately when the warning was given, skulked under the bushes, the grass, or whatever else offered for shelter or protection. They even stretched themselves at their full length upon the ground, and continued lying as motionless as if they were dead. In the meantime, the mother, with her eyes directed upwards, continued her cries and screaming as before. Upon looking up to where she seemed to gaze, I discovered a black spot just under the clouds, but was unable at first to determine what it was; however, it soon appeared to be a bird of prey, though at first at too great a distance to be distinguished. I have seen one of these animals continue in this violent agitated state, and her whole brood pinned down as it were to the ground, for four hours together; whilst their formidable foe has taken his circuits, has mounted, and hovered directly over their heads: at last upon disappearing, the parent began to change her note, and sent forth another cry which in an instant gave life to the whole trembling tribe, and they all flocked round her with expressions of pleasure, as if conscious of their happy escape from danger."

When once grown up, turkeys are very hardy birds, and feed themselves at very little expense to the farmer. Those of Norfolk are said to be the largest of this kingdom, weighing from twenty to thirty pounds. There are places, however, in the East Indies where they are known only in their domestic state, in which they grow to the weight of sixty pounds.

CHAPTER V.

THE PHEASANT.

It would surprise a sportsman to be told, that the Pheasant, which he finds wild in the woods, in the remotest parts of the kingdom, and in forests which can scarcely be said to have an owner, is a foreign bird, and was at first artificially propagated amongst us. They were brought into Europe from the banks of the Phasis, a river of Colchis in Asia Minor, from whence they still retain their name.

Next to the peacock, they are the most beautiful of birds, as well for the vivid colour of their plumes, as for their happy mixtures and variety. It is far beyond the power of the pencil to draw any thing so glossy, so bright, or points so finely blending into each other. We are told that when Crœsus, king of Lydia, was seated on his throne, adorned with royal magnificence, and all the barbarous pomp of eastern splendour, he asked Solon if he had ever beheld any thing so fine? The Greek philosopher, no way moved by the objects before him, or taking a pride in his native simplicity, replied, that after having seen the beautiful plumage of the pheasant, he could be astonished at no other finery.

In fact nothing can satisfy the eye with a greater variety and richness of ornament than this beautiful creature. The iris of the eye is yellow; and the eyes themselves are surrounded with a scarlet colour, sprinkled with small specks of black. On the fore-part of the head there are blackish feathers mixed with a shining purple. The top of the head and the upper part of the neck are tinged with a darkish green that shines like silk. In some, the top of the head is of a shining blue, and the head itself, as

well as the upper part of the neck, appears sometimes blue and sometimes green, as it is differently placed to the eye of the spectator. The feathers of the breast, the shoulders, the middle of the back, and the sides under the wings, have a blackish ground, with edges tinged of an exquisite colour, which appears sometimes black and sometimes purple, according to the different lights it is placed in; under the purple there is a transverse streak of gold colour. The tail, from the middle feathers to the root, is about eighteen inches long; the legs, the feet, and the toes, are of the colour of horn. There are black spurs on the legs, shorter than those of a cock; there is a membrane that connects two of the toes together; and the male is much more beautiful than the female.

This bird, though so beautiful to the eye, is not less delicate when served up to the table. Its flesh is considered as the greatest dainty; and when the old physicians spoke of the wholesomeness of any viands, they made their comparison with the flesh of the pheasant. However, notwithstanding all these perfections to tempt the curiosity of the palate, the pheasant has multiplied in its wild state; and, as if disdaining the protection of man, has left him to take shelter in the thickest woods and the remotest forests. All others of the domestic kind, the cock, the turkey or the pintada, when once reclaimed, have still continued in their domestic state, and persevered in the habits and appetites of willing slavery. But the pheasant, though taken from its native warm retreats, where the woods supply variety of food, and the warm sun suits its tender constitution, has still continued its attachment to native freedom; and, now wild among us, makes the most envied ornament of our parks and forests, where he feeds upon acorns and berries, and the scanty produce of our chilling climate.

This spirit of independence seems to attend the pheasant even in captivity. In the woods the hen pheasant lays from eighteen to twenty eggs in a season; but in a domestic state she seldom lays above ten. In the same manner, when wild, she hatches and leads up her brood with patience, vigilance, and courage; but when kept tame, she never sits well, so that a hen is generally her substitute upon such occasions; and as for leading her young to their food, she is utterly ignorant of where it is to be found, and the young birds starve if left solely to her protection. The pheasant, therefore, on every account, seems better left at large in the woods than reclaimed to pristine captivity. Its fecundity when wild is sufficient to stock the forest; its beautiful plumage adorns it; and its flesh retains a higher flavour from its unlimited freedom.

However, it has been the aim of late to take these birds once more from the woods, and to keep them in places fitted for their reception. Like all others of the poultry kind, they have no great sagacity, and suffer themselves easily to be taken. At night they roost upon the highest trees of the wood; and by day they come down into the lower brakes and bushes, where their food is chiefly found. They generally make a kind of flapping noise when they are with the females, and this often apprizes the sportsman of their retreats. At other times he tracks them in the snow, and frequently takes them in springes. But of all birds they are shot most easily, as they always make a whirring noise when they rise, by which they alarm the gunner, and being a large mark, and flying very slow, there is scarcely any missing them.

Ah! what avail his glossy, varying dyes,
His purpled crest and scarlet-circled eyes,
The vivid green his shining plumes unfold,
His painted wings, and breast that flames with gold?

POPE.

When these birds are taken young into keeping, they become as familiar as chickens; and when they are designed for breeding, they are put together in a yard, five hens to a cock; for this bird, like all of the poultry kind, is very salacious. In her natural state the female makes her nest of dry grass and leaves; the same must be laid for her in the pheasantry, and she herself will sometimes properly dispose them. If she refuses to hatch her eggs, then a common hen must be got to supply her place, which task she will perform with perseverance and success. The young ones are very difficult to be reared; and they must be supplied with ant's eggs, which is the food the old one leads them to gather when wild in the woods. To make these go the farther, they are to be chopped up with curds or other meat; and the young ones are to be fed with great exactness, both as to the quantity and the time of their supply. This food is sometimes also to be varied; and wood lice, ear-wigs, and other insects, are to make a variety. The place where they are reared must be kept extremely clean; their water must be changed twice or thrice a-day; they must not be exposed till the dew is off the ground in the morning; and they should always be taken in before sun-set. When they become adult, they very well can shift for themselves, but they are particularly fond of oats and barley.

In order to increase the breed, and make it still more valuable, Longolius teaches us a method that appears very peculiar. The pheasant is a very bold bird when first brought into the yard among other poultry, not sparing the peacock, nor even such young cocks and hens as it can master; but after a time it will live tamely among them, and will at last be brought to couple with a common hen. The breed thus produced takes much stronger after the phea-

sant than the hen; and in a few successions, if they be let to breed with the cock-pheasant, for the mixture is not barren, there will be produced a species more tame, stronger, and more prolific; so that he adds, that it is strange why most of our pheasantries are not stocked with birds produced in this manner.

The pheasant, when full grown, seems to feed indifferently upon every thing that offers. It is said by a French writer, that one of the king's sportsmen shooting at a parcel of crows, that were gathered round a dead carcass, to his great surprise upon coming up, found that he had killed as many pheasants as crows. It is even asserted by some, that such is the carnivorous disposition of this bird, that when several of them are put together in the same yard, if one of them happens to fall sick, or seems to be pining, that all the rest will fall upon, kill, and devour it. Such is the language of books; those who have frequent opportunities of examining the manners of the bird itself, know what credit ought to be given to such an account.

Of the pheasant, as of all other domestic fowl, there are many varieties. There are white pheasants, crested pheasants, spotted pheasants; but of all others, the golden pheasant of China is the most beautiful. It is a doubt whether the peacock itself can bear the comparison. However, the natives of China would not have us consider it as their most beautiful bird, though covered all over with eyes, resembling in miniature those of the peacock. By their accounts it is far exceeded by the *Fongwhang*, an imaginary bird of which they give a most fantastic description. It is thus that the people of every country, though possessed of the greatest advantages, have still others that they would persuade strangers they enjoy, which have existence only in the imagination.

CHAPTER VI.

[THE TRUMPETER.

This curious bird is found in various parts of South America, but in greatest plenty in the Amazons country. It is about the size of a large fowl, and lays eggs of a blue-green colour. The plumage is black, excepting the head and breast, which are of a smooth shining green. The bill is moderately long; the upper mandible is convex; the nostrils are oblong, sunk, and pervious; the tongue is cartilaginous, flat, and fringed at the end; and the legs are naked a little above the knees, with three toes before, and one behind.

The Trumpeter is also met with in the Carribee Islands, where it is called a *pheasant*, and its flesh is reckoned as good as that of the pheasant. The most characteristic and remarkable property of these birds consists in the wonderful noise they make, which some have supposed to proceed from the *anus*, and others from the belly. It is now certain, however, that this sound proceeds from the lungs. This bird is easily rendered familiar, and shows a strong attachment to those who feed it. It follows its master every where like a dog; and it is also remarkable that it will follow people through the streets, and out of town, and these too even perfect strangers. It is difficult to get rid of them; for if you enter a house, they will wait your return, and again join you, though often after an interval of three hours. "I have sometimes," says M. de la Borde, "betaken myself to my heels; but they ran faster, and always got before me, and when I stopped, they stopped also.—I know one," continues he, "which invariably follows all the strangers who enter its master's

house, accompanies them into the garden, takes as many turns as they do, and attends them back again." In their wild state, they associate in large flocks, and run with surprising swiftness.]

CHAPTER VII.

THE PINTADA, OR GUINEA-HEN.

THIS is a very remarkable bird, and in some measure unites the characteristics of the pheasant and the turkey. It has the fine delicate shape of the one, and the bare head of the other. To be more particular, it is about the size of a common hen; but as it is supported on longer legs, it looks much larger. It has a round back, with a tail turned downwards like a partridge. The head is covered with a kind of casque; and the whole plumage is black or dark gray, speckled with white spots. It has wattles under the bill, which do not proceed from the lower chap as in cocks, but from the upper, which gives it a very peculiar air, while its restless gait and odd chuckling sound distinguish it sufficiently from all other birds whatever.

It is well known all over Europe, and even better than with us, as the nations that border on the Mediterranean probably had it before us from those parts of Africa which lay nearest. Accordingly we find it in different countries called by different names, from the place whence they had it. They are by some called the Barbary hen; by others, the Tamis bird; and by others, the bird of Numidia. We have given it the name of that part of Africa from whence probably it was first brought.

In many parts of their native country they are

1. Spectacled Owl_2. Guinea Hen_3. Bustard.

seen in vast flocks together, feeding their young, and leading them in quest of food. All their habits are like those of the poultry kind, and they agree in every other respect, except that the male and female are so much alike, that they can hardly be distinguished asunder. The only difference lies in the wattles described above, which in the cock are of a bluish cast, in the hen they are more inclining to a red. Their eggs, like their bodies, are speckled; in our climate they lay but five or six in a season, but they are far more prolific in their sultry regions at home. They are kept among us rather for show than use, as their flesh is not much esteemed, and as they give a good deal of trouble in the rearing.

CHAPTER VIII.

THE BUSTARD.

The Bustard is the largest land bird that is a native of Britain. It was once much more numerous than it is at present; but the increased cultivation of the country, and the extreme delicacy of its flesh, has greatly thinned the species, so that a time may come when it may be doubted whether ever so large a bird was bred among us. It is probable that long before this the bustard would have been extirpated, but for its peculiar manner of feeding. Had it continued to seek shelter among our woods, in proportion as they were cut down, it must have been destroyed. If in the forest, the fowler might approach it without being seen; and the bird, from its size, would be too great a mark to be easily missed. But it inhabits only the open and extensive plain, where its food lies in abundance, and where every invader may be seen at a distance.

The bustard is much larger than the turkey; the male generally weighing from twenty-five to twenty-seven pounds. The neck is a foot long, and the legs a foot and a half. The wings are not proportionable to the rest of the body, being but four feet from the tip of the one to the other; for which reason the bird flies with great difficulty. The head and neck of the male are ash-coloured; the back is barred transversely with black, bright, and rust-colour. The greater quill feathers are black; the belly white; and the tail, which consists of twenty feathers, is marked with broad black bars.

It would seem odd as was hinted before, how so large a land bird as this could find shelter in so cultivated a country as England; but the wonder will cease when we find it only in the most open countries, where there is scarcely any approaching without being discovered. They are frequently seen in flocks of fifty or more, in the extensive downs of Salisbury Plain, in the heaths of Sussex and Cambridgeshire, the Dorsetshire uplands, and so on as far as East Lothian in Scotland. In those extensive plains, where there are no woods to screen the sportsman, nor hedges to creep along, the bustards enjoy an indolent security. Their food is composed of the berries that grow among the heath, and the large earth-worms that appear in great quantities on the downs before sun-rising in summer. It is in vain that the fowler creeps forward to approach them; they have always sentinels placed at proper eminences, which are ever on the watch, and warn the flock of the smallest appearance of danger. All therefore that is left the sportsman, is the comfortless view of their distant security. He may wish, but they are in safety.

It sometimes happens that these birds, though they are seldom shot by the gun, are often run down by greyhounds. As they are voracious and greedy,

they often sacrifice their safety to their appetite, and feed themselves so very fat, that they are unable to fly without great preparation. When the greyhound, therefore, comes within a certain distance, the bustard runs off flapping its wings, and endeavouring to gather air enough under them to rise; in the meantime the enemy approaches nearer and nearer, till it is too late for the bird even to think of obtaining safety by flight; for just at the rise there is always time lost, and of this the bird is sensible; it continues, therefore, on the foot until it has got a sufficient way before the dog for flight, or until it is taken.

As there are few places where they can at once find proper food and security, so they generally continue near their old haunts, seldom wandering above twenty or thirty miles from home. As their food is replete with moisture, it enables them to live upon these dry plains, where there are scarcely any springs of water, a long time without drinking. Besides this, nature has given the males an admirable magazine for their security against thirst. This is a pouch, the entrance of which lies immediately under the tongue, and capable of holding near seven quarts of water. This is probably filled upon proper occasions, to supply the hen when sitting, or the young before they can fly.

Like all other birds of the poultry kind, they change their mates at the season of incubation, which is about the latter end of summer. They separate in pairs if there be a sufficiency of females for the males; but when this happens to be otherwise, the males fight until one of them falls. In France, they often find some of those victims to gallantry dead in the fields, and no doubt are not displeased at the occasion.

They make their nests upon the ground, only just

scraping a hole in the earth, and sometimes lining it with a little long grass or straw. There they lay two eggs only, almost of the size of a goose egg, of a pale olive brown, marked with spots of a darker colour. They hatch for about five weeks, and the young ones run about as soon as they are out of the shell.

The bustards assemble in flocks in the month of October; and keep together till April. In winter, as their food becomes more scarce, they support themselves indiscriminately by feeding on moles, mice, and even little birds, when they can seize them. For want of other food, they are contented to live upon turnip leaves and such like succulent vegetables. In some parts of Switzerland, they are found frozen in the fields in severe weather; but when taken to a warm place they again recover. They usually live fifteen years, and are incapable of being propagated in a domestic state, as they probably want that food which best agrees with their appetite.

CHAPTER IX.

THE GROUSE, AND ITS AFFINITIES.

The Cock of the Wood, the Black Cock, the Grouse, and the Ptarmigan,—these are all birds of a similar nature, and chiefly found in heathy mountains and piny forests, at a distance from mankind. They might once indeed have been common enough all over England, when a great part of the country was covered with heath; but at present their numbers are thinned: the two first of this kind are utterly unknown in the South, and have taken refuge in the northern parts of Scotland, where the extensive heaths afford them security, and the forests shelter.

The cock of the wood is sometimes of the size of a turkey, and often weighs near fourteen pounds; the black cock, of which the male is all over black, though the female is of the colour of a partridge, is about the size of a hen, and like the former, is only found with us in the Highlands of Scotland; the grouse is about half as large again as a partridge, and its colour much like that of a woodcock, but redder, the ptarmigan is still somewhat less, and of a pale brown or ash-colour. They are all distinguishable from other birds of the poultry kind, by a naked skin, of a scarlet colour, above the eyes, in the place and of the figure of eye-brows.

It seems to be something extraordinary, that all the larger wild animals of every species choose the darkest and the inmost recesses of the woods for their residence, while the smaller kinds come more into the open and cultivated parts, where there is more food and more danger. It is thus with the birds I am describing: while the cock of the wood is seldom seen, except on the inaccessible parts of heathy mountains, or in the midst of piny forests, the grouse is found in great numbers in the neighbourhood of corn fields, where there is heath to afford retreat and shelter. Their food too somewhat differs; while the smaller kind lives upon heath blossoms, cranberries, and corn, the larger feeds upon the cones of the pine tree, and will sometimes entirely strip one tree, before it offers to touch those of another, though just beside him. In other respects, the manners of these birds are the same, being both equally simple in their diet, and licentious in their amours.

The Cock of the Wood, for it is from him we will take our description, is, as was said, chiefly fond of a mountainous and woody situation. In winter he resides in the darkest and inmost part of the

woods; in summer he ventures down from his retreat, to make short depredations on the farmer's corn. The delicacy of his flesh in some measure sets a high price upon his head; and as he is greatly sought after, so he continues, when he comes down from the hills, always on his guard. Upon these occasions he is seldom surprised; and those who would take him, must venture up to find him in his native retreats.

The cock of the wood, when in the forest, attaches himself principally to the oak and the pine tree; the cones of the latter serving for his food, and the thick boughs for a habitation. He even makes a choice of what cones he shall feed upon; for he sometimes will strip one tree bare before he will deign to touch the cones of another. He feeds also upon ants' eggs, which seem a high delicacy to all birds of the poultry kind; cranberries are likewise often found in his crop; and his gizzard, like that of domestic fowls, contains a quantity of gravel, for the purpose of assisting his powers of digestion.

At the earliest return of spring this bird begins to feel the genial influence of the season: during the month of March, the approaches of courtship are continued, and do not desist till the trees have all their leaves, and the forest is in full bloom. During this whole season the cock of the wood is seen, at sun-rise and setting, extremely active upon one of the largest branches of the pine tree. With his tail raised and expanded like a fan, and the wings drooping, he is seen walking backward and forward, his neck stretched out, his head swoln and red, and making a thousand ridiculous postures: his cry, upon that occasion, is a kind of loud explosion, which is instantly followed by a noise like the whetting of a sithe, which ceases and commences alternately for about an hour, and is then terminated by the same explosion.

During the time this singular cry continues, the bird seems entirely deaf, and insensible of every danger: whatever noise may be made near him, or even though fired at, he still continues his call; and this is the time that sportsmen generally take to shoot him. Upon all other occasions he is the most timorous and watchful bird in nature; but now he seems entirely absorbed by his instincts, and seldom leaves the place where he first begins to feel the accesses of desire. This extraordinary cry, which is accompanied by a clapping of the wings, is no sooner finished, than the female hearing it replies, approaches, and places herself under the tree, from whence the cock descends to impregnate her. The number of females that on this occasion resort to his call, is uncertain; but one male generally suffices for all.

The female is much less than her mate, and entirely unlike him in plumage, so that she might be mistaken for a bird of another species: she seldom lays more than six or seven eggs, which are white, and marked with yellow, of the size of a common hen's egg; she generally lays them in a dry place, and a mossy ground, and hatches them without the company of the cock. When she is obliged, during the time of incubation, to leave her eggs in quest of food, she covers them up so artfully with moss or dry leaves, that it is extremely difficult to discover them. On this occasion she is extremely tame and tranquil, however wild and timorous in ordinary. She often keeps to her nest, though strangers attempt to drag her away.

As soon as the young ones are hatched, they are seen running with extreme agility after the mother, though sometimes they are not entirely disengaged from the shell. The hen leads them forward, for the first time, into the woods, shows them ants' eggs, and the wild mountain berries, which, while young,

are their only food. As they grow older, their appetites grow stronger, and they then feed upon the tops of heather, and the cones of the pine tree. In this manner, they soon come to perfection; they are a hardy bird, their food lies every where before them, and it might therefore be expected that they should be found in great abundance. But this is not the case; their numbers are thinned by rapacious birds and beasts of every kind, and still more by their own salacious contests.

As soon as the clutching is over, which the female performs in the manner of a hen, the whole brood follows the mother for about a month or two; at the end of which the young males entirely forsake her, and keep in great harmony together till the beginning of spring. At this season they begin, for the first time, to feel the genial access; and then adieu to all their former friendships! They begin to consider each other as rivals; and the rage of concupiscence quite extinguishes the spirit of society. They fight each other like game-cocks; and at that time are so inattentive to their own safety, that it often happens that two or three of them are killed at a shot. It is probable, that in these contests the bird which comes off victorious takes possession of the female seraglio, as it is certain they have no faithful attachments.*

CHAPTER X.

OF THE PARTRIDGE, AND ITS VARIETIES.

THE partridge may be particularly considered as belonging to the sportsman. It is a bird which even

* This account of the Cock of the Wood is taken from the Journal Œconomique, and may be relied on.

our laws have taken under protection, and, like a peacock or a hen, may be ranked as a private property. The only difference now is, that we feed one in our farms, the other in our yards; that these are contented captives, those servants that have it in their power to change their master, by changing their habitation.

"These birds," says Willoughby, "hold the principal place in the feasts and entertainments of princes, without which their feasts are esteemed ignoble, vulgar, and of no account. The Frenchmen do so highly value, and are so fond of the partridge, that if they be wanting, they utterly slight and despise the best spread tables; as if there could be no feast without them." But however this might be in the times of our historian, the partridge is now too common in France to be considered as a delicacy; and this, as well as every other simple dish, is exploded for luxuries of a more compound invention.

In England, where the partridge is much scarcer, and a great deal dearer, it is still a favourite delicacy at the tables of the rich; and the desire of keeping it to themselves has induced them to make laws for its preservation, no way harmonizing with the general spirit of the English legislation. What can be more arbitrary than to talk of preserving the game; which, when defined, means no more than that the poor shall abstain from what the rich have taken a fancy to keep to themselves? If these birds could, like a cock or a hen, be made legal property; could they be taught to keep within certain districts, and only feed on those grounds that belong to the man whose entertainments they improve, it then might, with some show of justice, be admitted, that as a man fed them, so he might claim them. But this is not the case; nor is it in any man's power to lay a restraint upon the liberty of these birds, that, when

let loose, put no limits to their excursions. They feed every where, upon every man's ground; and no man can say, These birds are fed only by me. Those birds which are nourished by all, belong to all; nor can any one man, or any set of men, lay claim to them, when still continuing in a state of nature.

I never walked out about the environs of Paris, that I did not consider the immense quantity of game that was running almost tame on every side of me, as a badge of the slavery of the people; and what they wished me to observe as an object of triumph, I always regarded with a kind of secret compassion: yet this people have no game laws for the remoter parts of the kingdom; the game is only preserved in a few places for the king, and is free in most places else. In England the prohibition is general; and the peasant has not a right to what even slaves, as he is taught to call them, are found to possess.

Of partridges there are two kinds, the gray and the red. The red partridge is the largest of the two, and often perches upon trees; the gray, with which we are best acquainted in England, is most prolific, and always keeps on the ground.

The partridge seems to be a bird well known all over the world, as it is found in every country, and in every climate; as well in the frozen regions about the pole, as the torrid tracts under the equator. It even seems to adapt itself to the nature of the climate where it resides. In Greenland, the partridge, which is brown in summer, as soon as the icy winter sets in, begins to take a covering suited to the season; it is then clothed with a warm down beneath, and its outward plumage assumes the colour of the snows amongst which it seeks its food. Thus it is doubly fitted for the place, by the warmth and the colour of its plumage; the one to defend it from the cold, the other to prevent its being noticed by the

enemy. Those of Barakonda, on the other hand, are longer legged, much swifter of foot, and choose the highest rocks and precipices to reside in.

They all, however, agree in one character, of being immoderately addicted to venery, and, as some writers affirm, often to an unnatural degree. It is certain the male will pursue the hen even to her nest, and will break her eggs rather than not indulge his inclinations. Though the young ones have kept together in flocks during the winter, when they begin to pair in spring their society disperses, and combats, very terrible with respect to each other, ensue. Their manners, in other circumstances, resemble all those of poultry in general; but their cunning and instincts seem superior to those of the larger kinds. Perhaps, as they live in the very neighbourhood of their enemies, they have more frequent occasion to put their little arts in practice, and learn, by habit, the means of evasion or safety. Whenever, therefore, a dog, or other formidable animal approaches their nest, the female uses every means to draw him away. She keeps just before him, pretends to be incapable of flying, just hops up and then falls down before him, but never goes off so far as to discourage her pursuer. At length, when she has drawn him entirely away from her secret treasure, she at once takes wing, and fairly leaves him to gaze after her in despair.

After the danger is over, and the dog withdrawn, she then calls her young, who assemble at once at her cry, and follow where she leads them. There are generally from ten to fifteen in a covey; and, if unmolested, they live from fifteen to seventeen years.

There are several methods of taking them, as is well known; that by which they are taken in a net, with a setting dog, is the most pleasant, as well as the most secure. The dog, as every body knows, is

trained to this exercise by a long course of education: by blows and caresses he is taught to lie down at the word of command; a partridge is shown him, and he is then ordered to lie down; he is brought into the field, and when the sportsman perceives where the covey lies he orders his dog to crouch: at length the dog, from habit, crouches whenever he approaches a covey; and this is the signal which the sportsman receives for unfolding and covering the birds with his net. A covey thus caught, is sometimes fed in a place proper for their reception; but they can never be thoroughly tamed, like the rest of our domestic poultry.

CHAPTER XI.

THE QUAIL.

The last of the poultry kind that I shall mention is the Quail; a bird much smaller than any of the former, being not above half the size of a partridge. The feathers of the head are black, edged with rusty brown; the breast is of a pale yellowish red, spotted with black; the feathers on the back are marked with lines of a pale yellow, and the legs are of a pale hue. Except in the colours thus described, and the size, it every way resembles a partridge in shape, and, except that it is a bird of passage, all others of the poultry kind in its habits and nature.

The quail is by all known to be a bird of passage; and yet, if we consider its heavy manner of flying, and its dearth of plumage with respect to its corpulence, we shall be surprised how a bird so apparently ill-qualified for migration, should take such extensive journeys. Nothing however is more certain:

"When we sailed from Rhodes to Alexandria," says Bellonius, "about autumn, many quails, flying from the north to the south, were taken in our ship; and sailing at spring-time the contrary way, from the south to the north, I observed them on their return, when many of them were taken in the same manner." This account is confirmed by many others; who aver, that they choose a north wind for these adventures; the south wind being very unfavourable, as it retards their flight by moistening their plumage. They then fly two by two, continuing, when the way lies over land, to go faster by night than by day; and to fly very high, to avoid being surprised or set upon by birds of prey. However, it still remains a doubt whether quails take such long journeys as Bellonius has made them perform. It is now asserted by some, that the quail only migrates from one province of a country to another. For instance, in England they fly from the inland counties to those bordering on the sea, and continue there all the winter. If frost or snow drive them out of the stubble fields or marshes, they then retreat to the seaside, shelter themselves among the weeds, and live upon what is thrown up from the sea upon shore. Particularly in Essex, the time of their appearance upon the coasts of that country exactly coincides with their disappearance from the more internal parts of the kingdom; so that what has been said of their long flights, is probably not so well founded as is generally supposed.

These birds are much less prolific than the partridge, seldom laying more than six or seven whitish eggs, marked with ragged rust-coloured spots. But their ardour in courtship yields scarcely to any other bird, as they are fierce and cruel at that season to each other, fighting most desperately, and (a punishment they richly deserve) being at that time

very easily taken. Quail-fighting was a favourite amusement among the Athenians: they abstained from the flesh of this bird, deeming it unwholesome, supposing that it fed upon the white hellebore; but they reared great numbers of them for the pleasure of seeing them fight, and staked sums of money, as we do with regard to cocks, upon the success of the combat. Fashion, however, has at present changed with regard to this bird; we take no pleasure in its courage, but its flesh is considered as a very great delicacy.

Quails are easily caught by a call: the fowler, early in the morning, having spread his net, hides himself under it among the corn; he then imitates the voice of the female with his quail pipe, which the cock hearing, approaches with the utmost assiduity; when he has got under the net, the fowler then discovers himself, and terrifies the quail, who, attempting to get away, entangles himself the more in the net, and is taken. The quail may thus very well serve to illustrate the old adage, That every passion, carried to an inordinate excess, will at last lead to ruin.

PART III.

OF BIRDS OF THE PIE KIND.

CHAPTER I.

OF BIRDS OF THE PIE KIND IN GENERAL.

In marshalling our army of the feathered creation, we have placed in the van a race of birds long bred

to war, and whose passion is slaughter; in the centre we have placed the slow and heavy laden, that are usually brought into the field to be destroyed; we now come to a kind of light infantry, that partake something of the spirit of the two former, and yet belonging to neither. In this class we must be content to marshal a numerous irregular tribe, variously armed, with different pursuits, appetites, and manners; not formidably formed for war, and yet generally delighting in mischief; not slowly and usefully obedient, and yet without any professed enmity to the rest of their fellow-tenants of air.

To speak without metaphor, under this class of birds we may arrange all that noisy, restless, chattering, teasing tribe, that lies between the hen and the thrush, that, from the size of the raven down to that of the woodpecker, flutter round our habitations, and, rather with the spirit of pilferers than of robbers, make free with the fruits of human industry.

Of all the other classes, this seems to be that which the least contributes to furnish out the pleasures or supply the necessities of man. The falcon hunts for him; the poultry tribe supply him with luxurious food; and the little sparrow race delight him with the melody of their warblings. The crane kind make a studied variety in his entertainments, and the class of ducks are not only many of them delicate in their flesh, but extremely useful for their feathers. But in the class of the pie kind there are few, except the pigeon, that are any way useful. They serve rather to tease man than to assist or amuse him. Like faithless servants, they are fond of his neighbourhood, because they mostly live by his labour; but their chief study is what they can plunder in his absence, while their deaths make no atonement for their depredations.

But though, with respect to man, this whole class

is rather noxious than beneficial; though he may consider them in this light, as false, noisy, troublesome neighbours, yet, with respect to each other, no class of birds are so ingenious, so active, or so well fitted for society. Could we suppose a kind of morality among birds, we should find that these are by far the most industrious, the most faithful, the most constant, and the most connubial. The rapacious kinds drive out their young before they are fit to struggle with adversity; but the pie kind cherish their young to the last. The poultry class are faithless and promiscuous in their courtship; but these live in pairs, and their attachments are wholly confined to each other. The sparrow kind frequently overleap the bounds of nature, and make illicit varieties; but these never. They live in harmony with each other; every species is true to its kind, and transmits an unpolluted race to posterity.

As other kinds build in rocks or upon the ground, the chief place where these build is in trees or bushes; the male takes his share in the labours of building the nest, and often relieves his mate in the duties of incubation. Both take this office by turns; and when the young are excluded, both are equally active in making them an ample provision.

They sometimes live in societies; and in these there are general laws observed, and a kind of republican form of government established among them. They watch not only for the general safety, but for that of every other bird of the grove. How often have we seen a fowler, stealing in upon a flock of ducks or wild geese, disturbed by the alarming note of a crow or a magpie! its single voice gave the whole thoughtless tribe warning, and taught them in good time to look to their safety.

Nor are these birds less remarkable for their instincts than their capacity for instruction. There is

an apparent cunning or archness in the look of the whole tribe; and I have seen crows and ravens taught to fetch and carry with the docility of a spaniel. Indeed it is often an exercise, that without teaching, all this tribe are but too fond of. Every body knows what a passion they have for shining substances, and such toys as some of us put a value upon. A whole family has been alarmed at the loss of a ring; every servant has been accused, and every creature in the house, conscious of their own innocence, suspected each other, when, to the utter surprise of all, it has been found in the nest of a tame magpie or a jackdaw that nobody had ever thought of.

However, as this class is very numerous, it is not to be supposed that the manners are alike in all. Some, such as the pigeon, are gentle and serviceable to man; others are noxious, capricious, and noisy. In a few general characters they all agree; namely, in having hoarse voices, slight active bodies, and a facility of flight that baffles even the boldest of the rapacious kinds in the pursuit. I will begin with those birds which most properly may be said to belong to this class, and go on till I finish with the pigeon, a harmless bird, that resembles this tribe in little else except their size, and that seems to be the shade uniting the pie and the sparrow kind into one general picture.

It is not to be expected that in this sketch of the great magazine of nature we can stop singly to contemplate every object. To describe the number that offers would be tedious, and the similitude that one bears another would make the history disgusting. As an historian, in relating the actions of some noble people, does not stop to give the character of every private man in the army, but only of such as have been distinguished by their conduct, courage, or treachery; so should the historian of nature only

seize upon the most striking objects before him, and, having given one common account of the most remarkable, refer the peculiarities of the rest to their general description.

CHAPTER II.

OF THE RAVEN, THE CROW, AND THEIR AFFINITIES.

The Raven, the Carrion-Crow, and the Rook, are birds so well known, that a long description would but obscure our ideas of them. The raven is the largest of the three, and distinguished from the rest not only by his size, but by his bill being somewhat more hooked than that of the rest. As for the carrion-crow and the rook, they so strongly resemble each other, both in make and size, that they are not easily distinguished asunder. The chief difference to be found between them lies in the bill of the rook; which, by being frequently thrust into the ground to fetch out grubs and earth-worms, is bare of feathers as far as the eyes, and appears of a whitish colour. It differs also in the purple splendour or gloss of its feathers, which in the carrion crow are of a more dirty black. Nor is it amiss to make these distinctions, as the rook has but too frequently suffered for its similitude to the carrion-crow; and thus a harmless bird, that feeds only upon insects and corn, has been destroyed for another that feeds upon carrion, and is often destructive among young poultry.

The manners of the raven and the carrion-crow are exactly similar: they both feed upon carrion; they fly only in pairs; and will destroy other birds, if they can take them by surprise. But it is very different with the rook, the daw, and the Cornish chough,

which may be all ranked in this order. They are sociable and harmless; they live only upon insects and grain; and wherever they are, instead of injuring other birds, they seem sentinels for the whole feathered creation. It will be proper, therefore, to describe these two sorts according to their respective appetites, as they have nothing in common but the very strong similitude they bear to each other in their colour and formation.

The raven is a bird found in every region of the world: strong and hardy, he is uninfluenced by the changes of the weather; and when other birds seem numbed with cold, or pining with famine, the raven is active and healthy, busily employed in prowling for prey, or sporting in the coldest atmosphere. As the heats of the Line do not oppress him, so he bears the cold of the polar countries with equal indifference. He is sometimes, indeed, seen milk-white, and this may probably be the effect of the rigorous climates of the north. It is most likely that this change is wrought upon him as upon most other animals in that part of the world, where their robes, particularly in winter, assume the colour of the country which they inhabit. As in old age, when the natural heat decays, the hair grows gray, and at last white, so among these animals the cold of the climate may produce a similar languishment of colour, and may shut up those pores that conveyed the tincturing fluids to the extremest parts of the body.

However this may be, white ravens are often shown among us, which I have heard some say are rendered thus by art; and this we could readily suppose if they were as easily changed in their colour as they are altered in their habits and dispositions. A raven may be reclaimed to almost every purpose to which birds can be converted. He may be trained up for fowling like a hawk; he may be taught to

fetch and carry like a spaniel; he may be taught to speak like a parrot; but the most extraordinary of all is, that he can be taught to sing like a man. I have heard a raven sing the Black Joke with great distinctness, truth, and humour.

Indeed, when the raven is taken as a domestic, he has many qualities that render him extremely amusing. Busy, inquisitive, and impudent, he goes every where, affronts and drives off the dogs, plays his pranks on the poultry, and is particularly assiduous in cultivating the good will of the cook-maid, who seems to be the favourite of the family. But then, with the amusing qualities of a favourite, he often also has the vices and defects. He is a glutton by nature, and a thief by habit. He does not confine himself to petty depredations on the pantry or the larder, he soars at more magnificent plunder, at spoils that he can neither exhibit or enjoy, but which, like a miser, he rests satisfied with having the satisfaction of sometimes visiting and contemplating in secret. A piece of money, a tea-spoon, or a ring, are always tempting baits to his avarice; these he will slily seize upon, and if not watched, will carry to his favourite hole.

In his wild state the raven is an active and greedy plunderer. Nothing comes amiss to him; whether his prey be living or long dead, it is all the same, he falls to with a voracious appetite; and when he has gorged himself, flies to acquaint his fellows, that they may participate of the spoil. If the carcass be already in the possession of some more powerful animal, a wolf, a fox, or a dog, the raven sits at a little distance, content to continue a humble spectator till they have done. If in his flights he perceives no hopes of carrion, (and his scent is so exquisite that he can smell it at a vast distance,) he then contents himself with more unsavoury food, fruits, insects, and the accidental desert of a dunghill.

This bird chiefly builds its nest in trees, and lays five or six eggs of a pale green colour, marked with small brownish spots. They live sometimes in pairs, and sometimes they frequent in great numbers the neighbourhood of populous cities, where they are useful in devouring those carcasses that would otherwise putrefy and infect the air. They build in high trees or old towers, in the beginning of March with us in England, and sometimes sooner, as the spring is more or less advanced for the season. But it is not always near towns that they fix their retreats; they often build in unfrequented places, and drive all other birds from their vicinity. They will not permit even their young to keep in the same district, but drive them off when they are sufficiently able to shift for themselves. Martin, in his description of the Western Isles, avers, that there are three little islands among the number, which are occupied by a pair of ravens each, that drive off all other birds with great cries and impetuosity.

Notwithstanding the injury these birds do in picking out the eyes of sheep and lambs, when they find them sick and helpless, a vulgar respect is paid them, as being the birds that fed the prophet Elijah in the wilderness. This prepossession in favour of the raven is of a very ancient date, as the Romans themselves, who thought the bird ominous, paid it, from motives of fear, the most profound veneration. One of these that had been kept in the temple of Castor, as Pliny informs us, flew down into the shop of a tailor, who took much delight in the visits of his new acquaintance. He taught the bird several tricks, but particularly to pronounce the name of the emperor Tiberius and the whole royal family. The tailor was beginning to grow rich by those who came to see this wonderful raven, till an envious neighbour, displeased at the tailor's success, killed the bird, and

deprived the tailor of his future hopes of fortune. The Romans, however, took the poor tailor's part; they punished the man who offered the injury, and gave the raven all the honours of a magnificent interment.

Birds in general live longer than quadrupeds, and the raven is said to be one of the most long-lived of the number. Hesiod asserts that a raven will live nine times as long as a man; but though this is fabulous, it is certain that some of them have been known to live near a hundred years. This animal seems possessed of those qualities that generally produce longevity, a good appetie and great exercise. In clear weather, the ravens fly in pairs to a great height, making a deep loud noise, different from that of their usual croaking.

The Carrion-crow resembles the raven in its appetites, its laying, and manner of bringing up its young. It only differs in being less bold, less docile, and less favoured by mankind.

The Rook leads the way in another but a more harmless train, that have no carnivorous appetites, but only feed upon insects and corn. The Royston crow is about the size of the two former. The breast, belly, back, and upper part of the neck, being of a pale ash colour; the head and wings glossed over with a fine blue. He is a bird of passage, visiting this kingdom in the beginning of winter, and leaving it in the spring. He breeds, however, in different parts of the British dominions, and his nest is common enough in trees in Ireland. The Jackdaw is black like all the former, but ash-coloured on the breast and belly. He is not above the size of a pigeon. He is docile and loquacious; his head being large for the size of his body, which, as has been remarked, argues him ingenious and crafty. It builds in steeples, old castles, and high rocks, laying five

1. Impeyan Pheasant _ 2. Crested Curaſſow
3. Garrulous Roller _ 4. Cornish Chough.

or six eggs in a season. The Cornish Chough is like a jackdaw, but bigger, and almost the size of a crow. The feet and legs are long like those of a jackdaw, but of a red colour, and the plumage is black all over. It frequents rocks, old castles, and churches, by the sea-side, like the daw, and with the same noisy assiduity. It is only seen along the western coasts of England. These are birds very similar in their manners, feeding on grain and insects, living in society, and often suffering general castigation from the flock for the good of the community.

The rook, as is well known, builds in woods and forests in the neighbourhood of man, and sometimes makes choice of groves in the very midst of cities for the place of its retreat and security. In these it establishes a kind of legal constitution, by which all intruders are excluded from coming to live among them, and none suffered to build but acknowledged natives of the place. I have often amused myself with observing their plan of policy from my window in the Temple that looks upon a grove where they have made a colony in the midst of the city. At the commencement of spring, the rookery, which during the continuance of winter seemed to have been deserted, or only guarded by about five or six, like old soldiers in a garrison, now begins to be once more frequented; and in a short time all the bustle and hurry of business is fairly commenced. Where these numbers resided during the winter is not easy to guess; perhaps in the trees of hedge-rows to be nearer their food. In spring, however they cultivate their native trees; and in the places where they were themselves hatched, they prepare to propagate a future progeny. They keep together in pairs, and when the offices of courtship are over, they prepare for making their nests and laying. The old inhabitants of the place

are all already provided: the nest which served them for years before, with a little trimming and dressing, will serve very well again; the difficulty of nestling lies only upon the young ones who have no nest, and must therefore get up one as well as they can. But not only the materials are wanting, but also the place in which to fix it. Every part of a tree will not do for this purpose, as some branches may not be sufficiently forked, others may not be sufficiently strong, and still others may be too much exposed to the rockings of the wind. The male and female upon this occasion, are, for some days, seen examining all the trees of the grove very attentively; and when they have fixed upon a branch that seems fit for their purpose, they continue to sit upon and observe it very sedulously for two or three days longer. The place being thus determined upon, they begin to gather the materials for their nest, such as sticks and fibrous roots, which they regularly dispose in the most substantial manner. But here a new and unexpected obstacle arises. It often happens that the young couple have made choice of a place too near the mansion of an older pair, who do not choose to be incommoded by such troublesome neighbours. A quarrel therefore instantly ensues, in which the old ones are always victorious.

The young couple, thus expelled, are obliged again to go through the fatigues of deliberating, examining, and choosing; and having taken care to keep their due distance, the nest begins again, and their industry deserves commendation. But their alacrity is often too great in the beginning; they soon grow weary of bringing the materials of their nest from distant places; and they very easily perceive that sticks may be provided nearer home, with less honesty indeed, but some degree of address. Away they go, therefore, to pilfer as fast as they can; and wherever

they see a nest unguarded, they take care to rob it of the very choicest sticks of which it is composed. But these thefts never go unpunished; and probably upon complaint being made, there is a general punishment inflicted. I have seen eight or ten rooks come upon such occasions, and setting upon the new nest of the young couple all at once, tear it in pieces in a moment.

At length, therefore, the young pair find the necessity of going more regularly and honestly to work. While one flies to fetch the materials, the other sits upon the tree to guard it; and thus in the space of three or four days, with a skirmish now and then between, the pair have fitted up a commodious nest, composed of sticks without, and of fibrous roots and long grass within. From the instant the female begins to lay all hostilities are at an end; not one of the whole grove that a little before treated her so rudely, will now venture to molest her; so that she brings forth her brood with patient tranquillity. Such is the severity with which even native rooks are treated by each other; but if a foreign rook should attempt to make himself a denizen of their society, he would meet with no favour; the whole grove would at once be up in arms against him and expel him without mercy.

In some countries these birds are considered as a benefit, in others as a nuisance; their chief food is the worm of the dorbeetle and corn; thus they may be said to do as much service by destroying that noxious insect, as they do injury by consuming the produce of the husbandman's industry.

To this tribe of the crow kind, some foreign sorts might be added: I will take notice only of one, which, from the extraordinary size and fashion of its bill, must not be passed in silence. This is the Calao, or horned Indian raven, which exceeds the common

raven in size and habits of depredation. But what he differs in from all other birds is the beak, which, by its length and curvature at the end, appears designed for rapine; but then it has a kind of horn standing out from the top, which looks somewhat like a second bill, and gives this bird, otherwise fierce and ugly, a very formidable appearance. The horn springs out of the forehead, and grows to the upper part of the bill, being of great bulk; so that near the forehead it is four inches broad, not unlike the horn of the rhinoceros, but more crooked at the tip. Were the body of the bird answerable in size to the head, the calao would exceed in magnitude even the vulture or the eagle. But the head and beak are out of all proportion, the body being not much larger than that of a hen. Yet even here there are varieties; for in such of those birds as come from different parts of Africa, the body is proportionable to the beak; in such as come from the Molucca Islands, the beak bears no proportion to the body. Of what use this extraordinary excrescence is to the bird, is not easy to determine; it lives like others of its kind upon carrion, and seldom has a living enemy to cope with: Nature seems to sport in the production of many animals, as if she were willing to exhibit instances as well of variety as economy in their formation.

CHAPTER III.

OF THE MAGPIE, AND ITS AFFINITIES.

THERE are such a variety of birds that may be distributed under this head, that we must not expect very precise ideas of any. To have a straight strong

bill, legs formed for hopping, a body of about the size of a magpie, and party-coloured plumage, are the only marks by which I must be contented to distinguish this numerous fantastic tribe, that add to the beauty, though not to the harmony of our landscapes. In fact, their chattering every where disturbs the melody of the lesser warblers, and their noisy courtship not a little damps the song of the linnet and the nightingale.

However, we have very few of this kind in our woods, compared to those in the neighbourhood of the Line. There they not only paint the scene with the beauty and the variety of their plumage, but stun the ear with their vociferation. In those luxuriant forests, the singing-birds are scarcely ever heard, but a hundred varieties of the pie, the jay, the roller, the chatterer, and the toucan, are continually in motion, and with their illusive mockeries disturb or divert the spectator, as he happens to be disposed.

The Magpie is the chief of this kind with us, and is too well known to need a description. Indeed, were its other accomplishments equal to its beauty, few birds could be put in competition. Its black, its white, its green and purple, with the rich and gilded combination of the glosses on its tail, are as fine as any that adorn the most beautiful of the feathered tribe. But it has too many of the qualities of a beau to depreciate these natural perfections: vain, restless, loud, and quarrelsome, it is an unwelcome intruder every where; and never misses an opportunity, when it finds one, of doing mischief.

The magpie bears a great resemblance to the butcher-bird in its bill, which has a sharp process near the end of the upper chap, as well as in the shortness of its wings, and the form of the tail, each feather shortening from the two middlemost. But it agrees still more in its food, living not only upon

worms and insects, but also upon small birds when they can be seized. A wounded lark, or a young chicken separated from the hen, are sure plunder; and the magpie will even sometimes set upon and strike a blackbird.

The same insolence prompts it to tease the largest animals when its insults can be offered with security. They often are seen perched upon the back of an ox or a sheep, pecking up the insects to be found there, chattering and tormenting the poor animal at the same time, and stretching out their necks for combat, if the beast turns its head backward to reprehend them. They seek out also the nests of birds, and, if the parent escapes, the eggs make up for the deficiency: the thrush and the blackbird are but too frequently robbed by this assassin, and this in some measure causes their scarcity.

No food seems to come amiss to this bird; it shares with ravens in their carrion, with rooks in their grain, and with the cuckoo in birds' eggs: but it seems possessed of a providence seldom usual with gluttons; for when it is satisfied for the present, it lays up the remainder of the feast for another occasion. It will even in a tame state hide its food when it has done eating, and after a time return to the secret hoard with renewed appetite and vociferation.

In all its habits it discovers a degree of instinct unusual to other birds. Its nest is not less remarkable for the manner in which it is composed than for the place the magpie takes to build it in. The nest is usually placed, conspicuous enough, either in the middle of some hawthorn bush, or on the top of some high tree. The place, however, is always found difficult of access; for the tree pitched upon usually grows in some thick hedge-row, fenced by brambles at the root; or sometimes one of the higher bushes is fixed upon for the purpose. When the place is

thus chosen as inaccessible as possible to men, the next care is to fence the nest above, so as to defend it from all the various enemies of air. The kite, the crow, and the sparrow-hawk, are to be guarded against: as their nests have been sometimes plundered by the magpie, so it is reasonably feared that they will take the first opportunity to retaliate. To prevent this, the magpie's nest is built with surprising labour and ingenuity.

The body of the nest is composed of hawthorn branches, the thorns sticking outward, but well united together by their mutual insertions. Within it is lined with fibrous roots, wool, and long grass, and then nicely plastered all round with mud and clay. The body of the nest being thus made firm and commodious, the next work is to make the canopy which is to defend it above. This is composed of the sharpest thorns, wove together in such a manner as to deny all entrance except at the door, which is just large enough to permit egress and regress to the owners. In this fortress the male and female hatch and bring up their brood with security, sheltered from all attacks but those of the climbing school-boy, who often finds his torn and bloody hands too dear a price for the eggs or the young ones. The magpie lays six or seven eggs, of a pale green colour, spotted with brown.

This bird, in its domestic state, preserves its natural character with strict propriety. The same noisy, mischievous habits attend it to the cage that marked it in the woods; and being more cunning, so it is also a more docile bird than any other taken into keeping. Those who are desirous of teaching it to speak, have a foolish custom of cutting its tongue, which only puts the poor animal to pain, without improving its speech in the smallest degree. Its speaking is sometimes very distinct; but its sounds are too thin

and sharp to be an exact imitation of the human voice, which the hoarse raven and parrot can counterfeit more exactly.

To this tribe we may refer the Jay, which is one of the most beautiful of the British birds. The forehead is white, streaked with black; the head is covered with very long feathers, which it can erect into a crest at pleasure; the whole neck, back, breast, and belly, are of a faint purple, dashed with gray; the wings are most beautifully barred with a lovely blue, black, and white; the tail is black, and the feet of a pale brown. Like the magpie, it feeds upon fruits, will kill small birds, and is extremely docile.

The Chatterer also, which is a native of Germany, may be placed in this rank; and is somewhat less than the former. It is variegated with a beautiful mixture of colours; red, ash colour, chesnut, and yellow: but what distinguishes it from all other birds, are the horny appendages from the tips of seven of the lesser quill feathers, which stand bare of beards, and have the colour and gloss of the best red sealing-wax.

The Roller is not less beautiful than any of the former. The breast and belly are blue; the head green; and the wings variegated with blue, black, and white. But it may be distinguished from all others by a sort of naked tubercles or warts near the eyes, which still farther contribute to increase its beauty.

To this class may be added a numerous list from all the tropical forests of the East and West; where the birds are remarkable for discordant voices and brilliant plumage. I will fix only upon one, which is the most singular of all the feathered creation. This is the Toucan, a bird of the pie kind, whose bill is nearly as large as the rest of its whole body.

Of this extraordinary bird there are four or five varieties. I will only describe the red-beaked toucan; and as the figure of this bird makes the principal part of its history, I will follow Edwards through all the minutiæ of its singular conformation. It is about the size of and shaped like a jackdaw, with a large head to support its monstrous bill; this bill, from the angles of the mouth to its point, is six inches and a half, and its breadth in the thickest part is a little more than two. Its thickness near the head is one inch and a quarter, and it is a little rounded along the top of the upper chap, the under side being round also; the whole of the bill extremely slight, and a little thicker than parchment. The upper chap is of a bright yellow, except on each side, which is of a fine scarlet colour; as is also the lower chap, except at the base, which is purple. Between the head and the bill there is a black line of separation all round the base of the bill, in the upper part of which the nostrils are placed, and are almost covered with feathers, which has occasioned some writers to say that the toucan has no nostrils. Round the eyes, on each side of the head, is a space of bluish skin, void of feathers, above which the head is black, except a white spot on each side, joining to the base of the upper chap. The hinder part of the neck, the back, wings, tail, belly, and thighs, are black. The under side of the head, throat, and the beginning of the breast, are white. Between the white on the breast, and the black on the belly, is a space of red feathers, in the form of a new moon with its horns upwards. The legs, feet, and claws, are of an ash colour; and the toes stand like those of the parrot, two before and two behind.

It is reported by travellers, that this bird, though furnished with so formidable a beak, is harmless and gentle, being so easily made tame as to sit and hatch

its young in houses. It feeds chiefly upon pepper, which it devours very greedily, gorging itself in such a manner that it voids it crude and unconcocted. This, however, is no objection to the natives from using it again; they even prefer it before that pepper which is fresh gathered from the tree, and seem persuaded that the strength and heat of the pepper is qualified by the bird, and that all its noxious qualities are thus exhausted.

Whatever be the truth of this report, nothing is more certain than that the toucan lives only upon a vegetable diet; and in a domestic state, to which it is frequently brought in the warm countries where it is bred, it is seen to prefer such food to all other. Pozzo, who bred one tame, asserts, that it leaped up and down, wagged the tail, and cried with a voice resembling that of a magpie. It fed upon the same things that parrots do; but was most greedy of grapes, which being plucked off one by one, and thrown into the air, it would most dexterously catch before they fell to the ground. Its bill, he adds, was hollow, and upon that account very light, so that it had but little strength in so apparently formidable a weapon, nor could it peck or strike smartly therewith. But its tongue seemed to assist the efforts of this unwieldly machine: it was long, thin, and flat, not unlike one of the feathers on the neck of a dunghill cock; this it moved up and down, and often extended five or six inches from the bill. It was of a flesh colour, and very remarkably fringed on each side with very small filaments, exactly resembling a feather.

It is probable that this long tongue has greater strength than the thin hollow beak that contains it. It is likely that the beak is only a kind of sheath for this peculiar instrument, used by the toucan, not only in making itself a nest, but also in obtaining its provision. Nothing is more certain than that this

1. Hoopoe — 2. Promerops — 3. Woodpecker
4. Kingfisher.

bird builds its nest in holes of trees, which have been previously scooped out for this purpose; and it is not very likely that so feeble a bill could be very serviceable in working upon such hard materials.

Be this as it will, there is no bird secures its young better from external injury than the toucan. It has not only birds, men, and serpents to guard against, but a numerous tribe of monkeys, still more prying, mischievous, and hungry, than all the rest. The toucan, however, scoops out its nest in the hollow of some tree, leaving only a hole large enough to go in and out at. There it sits with its great beak, guarding the entrance; and if the monkey ventures to offer a visit of curiosity, the toucan gives him such a welcome, that he presently thinks proper to pack off, and is glad to escape with safety.

This bird is only found in the warm climates of South America, where it is in great request both for the delicacy of its flesh, which is tender and nourishing, and for the beauty of its plumage, particularly the feathers of the breast. The skin of this part the Indians pluck off, and, when dry, glue to their cheeks; and this they consider as an irresistible addition to their beauty.

CHAPTER IV.

OF THE WOODPECKER, AND ITS AFFINITIES.

We now come to the numerous tribe of Woodpeckers—a class easily distinguished from all others, both by their peculiar formation, their method of procuring food, and their manner of providing a place of safety for their young. Indeed, no other class of birds seems more immediately formed for the method

of life they pursue, being fitted by nature at all points for the peculiarity of their condition. They live chiefly upon the insects contained in the body of trees; and for this purpose are furnished with a straight, hard, strong, angular and sharp bill, made for piercing and boring. They have a tongue of a very great length, round, ending in a sharp, stiff, bony thorn, dentated on each side, to strike ants and insects when dislodged from their cells. Their legs are short and strong, for the purposes of climbing. Their toes stand two forward and two backward, which is particularly serviceable in holding by the branches of trees. They have hard stiff tails to lean upon when climbing. They feed only upon insects, and want that intestine which naturalists call the *cæcum*, a circumstance peculiar to this tribe only.

Of this bird there are many kinds, and many varieties in each kind. They form large colonies in the forests of every part of the world. They differ in size, colour, and appearance; and agree only in the marks above mentioned, or in those habits which result from so peculiar a conformation. Instead, therefore, of descending into a minute discrimination of every species, let us take one for a pattern, to which all the rest will be found to bear the strongest affinity. Words can but feebly describe the plumage of a bird; but it is the province of history to enter into a detail of every animal's pursuits and occupations.

The Green Woodspite or Woodpecker is called the *Rain-Fowl* in some parts of the country, because, when it makes a greater noise than ordinary, it is supposed to foretell rain. It is about the size of a jay; the throat, breast, and belly, are of a pale greenish colour; and the back, neck, and covert feathers of the wings, are green. But the tongue of this lit-

tle animal makes its most distinguished characteristic, as it serves for its support and defence. As was said above, the woodpecker feeds upon insects; and particularly on those which are lodged in the body of hollow or rotten trees. The tongue is its instrument for killing and procuring this food, which cannot be found in great plenty. This is round, ending in a stiff, sharp, bony tip, dentated on both sides, like the beard of an arrow; and this it can dart out three or four inches from the bill, and draw in again at pleasure. Its prey is thus transfixed and drawn into the bill, which, when swallowed, the dart is again launched at fresh game. Nothing has employed the attention of the curious in this part of anatomy, more than the contrivance by which the tongue of this bird performs its functions with such great celerity. The tongue is drawn back into the bill by the help of two small round cartilages, fastened into the forementioned bony tip, and running along the length of the tongue. These cartilages, from the root of the tongue, take a circuit beyond the ears, and being reflected backwards to the crown of the head, make a large bow. The muscular spongy flesh of the tongue encloses these cartilages like a sheath, and is so made that it may be extended or contracted like a worm. The cartilages, indeed, have muscles accompanying them along their whole length backwards. But there is still another contrivance; for there is a broad muscle joining the cartilages to the bones of the skull, which, by contracting or dilating, forces the cartilages forward through the tongue, and then forces the tongue and all through the bill, to be employed for the animal's preservation in piercing its prey.

Such is the instrument with which this bird is provided, and this the manner in which this instrument is employed. When a wood-pecker, by its na-

tural sagacity, finds out a rotten hollow tree, where there are worms, ants' eggs, or insects, it immediately prepares for its operations. Resting by its strong claws, and leaning on the thick feathers of its tail, it begins to bore with its sharp strong beak, until it discloses the whole internal habitation. Upon this, either through pleasure at the sight of its prey, or with a desire to alarm the insect colony, it sends forth a loud cry, which throws terror and confusion into the whole insect tribe. They creep hither and thither, seeking for safety, while the bird luxuriously feasts upon them at leisure, darting its tongue with unerring certainty, and devouring the whole brood.

The wood-pecker, however, does not confine its depredations solely to trees, but sometimes lights upon the ground, to try its fortune at an ant-hill. It is not so secure of prey there as in the former case, although the numbers are much greater. They lie generally too deep for the bird to come at them, and it is obliged to make up by stratagem the defects of power. The wood-pecker first goes to their hills, which it pecks, in order to call them abroad; it then thrusts out its long red tongue, which being like a worm, and resembling their usual prey, the ants come out to settle upon it in great numbers; however, the bird, watching the properest opportunity, withdraws its tongue at a jerk, and devours the devourers. This stratagem it continues till it has alarmed their fears, or till it is quite satisfied.

As the woodpecker is obliged to make holes in trees to procure food, so is it also to make cavities still larger to form its nest and to lay in. This is performed, as usual, with the bill; although some have affirmed that the animal uses its tongue, as a gimblet, to bore with. But this is a mistake; and those that are curious, may often hear the noise of

the bill making its way in large woods and forests. The woodpecker, chooses, however, for this purpose, trees that are decayed, or wood that is soft, like beech, elm, and poplar. In these, with very little trouble, it can make holes as exactly round as a mathematician could with compasses. One of these holes the bird generally chooses for its own use, to nestle and bring up its young in; but as they are easily made, it is delicate in its choice, and often makes twenty before one is found fit to give entire satisfaction. Of those which it has made and deserted, other birds, not so good borers, and less delicate in their choice, take possession. The jay and the starling lay their eggs in these holes; and bats are now and then found in peaceable possession. Boys sometimes have thrust in their hands with certain hopes of plucking out a bird's egg, but, to their great mortification, have had their fingers bitten by a bat at the bottom.

The woodpecker takes no care to line its nest with feathers or straw, its eggs are deposited inthe hole, without any thing to keep them warm, except the heat of the parent's body. Their number is generally five or six; always white, oblong, and of a middle size. When the young are excluded, and before they leave the nest, they are adorned with a scarlet plumage under the throat, which adds to their beauty.

In our climate, this bird is contented with such a wainscot habitation as has been described for its young; but in the warmer regions of Guinea and Brasil, they take a very different method to protect and hatch their nascent progeny. A traveller who walks into the forests of those countries, among the first strange objects that excite curiosity, is struck with the multitude of birds' nests hanging at the extremity of almost every branch. Many other kinds

of birds build in this manner, but the chief of them are of the woodpecker kind; and indeed there is not in the whole history of nature, a more singular instance of the sagacity of those little animals in protecting themselves against such enemies as they have most occasion to fear. In cultivated countries, a great part of the caution of the feathered tribe is to hide or defend their nests from the invasions of man, as he is their most dreaded enemy. But in the depth of those remote and solitary forests, where man is but seldom seen, the little bird has nothing to apprehend from man. The parent is careless how much the nest is exposed to general notice, satisfied if it be out of the reach of those rapacious creatures that live by robbery and surprise. If the monkey or the snake can be guarded against, the bird has no other enemies to fear: for this purpose, its nest is built upon the depending points of the most outward branches of a tall tree, such as the banana or the plantain. On one of those immense trees is seen the most various, and the most inimical assemblage of creatures that can be imagined. The top is inhabited by monkeys of some particular tribe, that drive off all others; lower down twine about the great trunk numbers of the larger snakes, patiently waiting till some unwary animal comes within the sphere of their activity; and at the edges of the tree hang these artificial nests, in great abundance, inhabited by birds of the most delightful plumage.

The nest is usually formed in this manner: When the time of incubation approaches, they fly busily about, in quest of a kind of moss, called by the English inhabitants of those countries *old man's beard*. It is a fibrous substance, and not very unlike hair, which bears being moulded into any form, and suffers being glued together. This, therefore, the little woodpecker, called by the natives of Brasil the *Gui-*

1. Golden Oriole — 2. Indian Bee Eater
3. Nests of Tropical Birds.

ratemga, first glued by some viscous substance, gathered in the forest, to the extremest branch of a tree; then building downward, and still adding fresh materials to those already procured, a nest is formed that depends, like a pouch, from the point of the branch; the hole to enter at is on the side: and all the interior parts are lined with the finer fibres of the same substances which compose the whole.

Such is the general contrivance of these hanging nests, which are made by some other birds with still superior art. A little bird of the Grosbeak kind, in the Philippine Islands, makes its nest in such a manner that there is no opening but from the bottom. At the bottom the bird enters, and goes up through a funnel like a chimney, till it comes to the real door of the nest, which lies on one side, and only opens into this funnel.

Some birds glue their nest to the leaf of the banana tree, which makes two sides of their little habitation, while the other two are artificially composed by their own industry. But these, and all of the kind, are built with the same precautions to guard the young against the depredations of monkeys and serpents, which abound in every tree. The nest hangs there, before the spoilers, a tempting object, which they can only gaze upon, while the bird flies in and out, without danger or molestation from so formidable a vicinity.

[The Sociable Gros-beak was discovered by Mr. Patterson in the interior of Africa. These birds live together in large societies, and their mode of nidification is extremely uncommon. They build in a species of *mimosa* which grows to an uncommon size; and which they seem to have selected for that purpose, as well on account of its ample head, and the great strength of its branches, calculated to admit and to support the extensive buildings which

they have to erect, as for the tallness and smoothness of its trunk, which their great enemies, the serpent tribe are unable to climb. The method in which the nests themselves are fabricated is highly curious. In the one described by Mr. Patterson there could be no less a number, he says, than from eight hundred to one thousand residing under the same roof. He calls it a roof, because it perfectly resembles that of a thatched house; and the ridge forms an angle so acute and so smooth, projecting over the entrance of the nest below, that it is impossible for any reptile to approach them. "The industry of these birds seems almost equal (says our author) to that of the bee: throughout the day they appear to be busily employed in carrying a fine species of grass, which is the principal material they employ for the purpose of erecting this extraordinary work, as well as for additions and repairs. Though my short stay in the country was not sufficient to satisfy me, by ocular proof, that they added to their nest as they annually increased in numbers, still from the many trees which I have seen borne down with the weight, and others which I have observed with their boughs completely covered over, it would appear that this is really the case. When the tree which is the support of this aërial city is obliged to give way to the increase of weight, it is obvious that they are no longer protected, and are under the necessity of rebuilding in other trees. One of these deserted nests I had the curiosity to break down, so as to inform myself of the internal structure of it, and found it equally ingenious with that of the external. There are many entrances, each of which forms a regular street, with nests on both sides, at about two inches distance from each other. The grass with which they build is called the Boshman's grass; and I believe the seed of it to be their principal food,

though on examining their nests, I found the wings and legs of different insects. From every appearance the nest which I dissected had been inhabited for many years; and some parts of it were much more complete than others: this therefore I conceive nearly to amount to a proof, that the animals added to it at different times, as they found it necessary, from the increase of the family, or rather of the nation or community."]

CHAPTER V.

OF THE BIRD OF PARADISE, AND ITS VARIETIES.

THERE are few birds that have more deceived and puzzled the learned than this. Some have described it as an inhabitant of the air, living only upon the dew of heaven, and never resting below; others have acquiesced in the latter part of its history, but have given it flying insects to feed on. Some have asserted that it was without feet, and others have ranked it among the birds of prey.

The great beauty of this bird's plumage, and the deformity of its legs, seem to have given rise to most of these erroneous reports. The native savages of the Molucca Islands, of which it is an inhabitant, were very little studious of natural history; and perceiving the inclination the Europeans had for this beautiful bird, carefully cut off its legs before they brought it to market: thus concealing its greatest deformity, they considered themselves entitled to rise in their demands when they offered it for sale. One deceit led on to another; the buyer, finding the bird without legs, naturally inquired after them, and the seller as naturally began to assert that it had none.

Thus far the European was imposed upon by others; in all the rest he imposed upon himself. Seeing so beautiful a bird without legs, he concluded that it could live only in air, where legs were unnecessary. The extraordinary splendour of its plumage assisted this deception; and as it had heavenly beauty, so it was asserted to have a heavenly residence. From thence its name, and all the false reports that have been propagated concerning it.

Error, however, is short-lived; and time has discovered that this bird not only has legs, but very large strong ones for its size. Credulity, when undeceived, runs into the opposite extreme; and, soon after, this harmless bird was branded with the character of being rapacious, of destroying all those of smaller size, and, from the amazing rapidity of its flight, as qualified peculiarly for extensive rapine. The real history of this pretty animal is at present tolerably well known, and it is found to be as harmless as it is beautiful.

There are two kinds of the Bird of Paradise; one about the size of a pigeon, which is more common; the other not much larger than a lark, which has been described more imperfectly. They are both sufficiently distinguished from all others, not only by the superior vivacity of their tints, but by the feathers of the tail, there being two long slender filaments growing from the upper part of the rump; these are longer than the bird's body, and bearded only at the end. By this mark the bird of paradise may be easily known; but still more easily by its gaudy livery, which being so very brilliant, demands to be minutely described.

This bird appears to the eye as large as a pigeon, though in reality the body is not much greater than that of a thrush. The tail, which is about six inches, is as long as the body; the wings are large, com-

pared with the bird's other dimensions. The head, the throat, and the neck, are of a pale gold colour. The base of the bill is surrounded by black feathers, as also the side of the head and throat, as soft as velvet, and changeable like those on the neck of a mallard. The hinder part of the head is of a shining green, mixed with gold. The body and wings are chiefly covered with beautiful brown, purple, and gold feathers. The uppermost part of the tail feathers are of a pale yellow, and those under them white, and longer than the former; for which reason the hinder part of the tail appears to be all white. But what chiefly excites curiosity are the two long naked feathers above mentioned, which spring from the upper part of the rump above the tail, and which are usually about three feet long. These are bearded only at the beginning and the end; the whole shaft for above two feet nine inches being of a deep black, while the feathered extremity is of a changeable colour like the mallard's neck.

This bird, which for beauty exceeds all others of the pie kind, is a native of the Molucca Islands, but found in greatest numbers in that of Aro. There, in the delightful and spicy woods of the country, do these beautiful creatures fly in large flocks; so that the groves which produce the richest spices produce the finest birds also. The inhabitants themselves are not insensible of the pleasure these afford, and give them the name of God's birds, as being superior to all others that he has made. They live in large flocks, and at night generally perch upon the same tree. They are called by some the *Swallows of Ternate*, from their rapid flight, and from their being continually on the wing in pursuit of insects, their usual prey.

As the country where they are bred has its tempestuous season, when rains and thunders continu-

ally disturb the atmosphere, these birds are then but seldom seen. It is thought that they then fly to other countries, where their food appears in greater abundance, for, like swallows, they have their stated times of return. In the beginning of the month of August they are seen, in great numbers, flying together, and, as the inhabitants would have us believe, following their king, who is distinguished from the rest by the lustre of his plumage, and that respect and veneration which is paid him. In the evening they perch upon the highest trees of the forest, particularly one which bears a red berry, upon which they sometimes feed, when other food fails them. In what manner they breed, or what may be the number of their young, as yet remains for discovery.

The natives who make a trade of killing and selling these birds to the Europeans, generally conceal themselves in the trees where they resort, and having covered themselves up from sight in a bower made of the branches, they shoot at the birds with reedy arrows, and, as they assert, if they happen to kill the king, they then have a good chance for killing the greatest part of the flock. The chief mark by which they know the king is by the ends of the feathers in his tail, which have eyes like those of a peacock. When they have taken a number of these birds, their usual method is to gut them and cut off their legs; they then run a hot iron into the body, which dries up the internal moisture, and filling the cavity with salts and spices, they sell them to the Europeans for a perfect trifle.

CHAPTER VI.

THE CUCKOO, AND ITS VARIETIES.

From a bird of which many fables have been reported, we pass to another that has not given less scope to fabulous invention. The note of the Cuckoo is known to all the world; the history and nature of the bird itself still remains in great obscurity. That it devours its parent, that it changes its nature with the season, and becomes a sparrow-hawk, were fables invented of this bird, and are now sufficiently refuted. But where it resides in winter, or how it provides for its supply during that season, still connues undiscovered.

This singular bird, which is somewhat less than a pigeon, shaped like a magpie, and of a grayish colour, is distinguished from all other birds by its round prominent nostrils. Having disappeared all the winter, it discovers itself in our country early in the spring by its well known call. Its note is heard earlier or later, as the season seems to be more or less forward, and the weather more or less inviting. From the cheerful voice of this bird the farmer may be instructed in the real advancement of the year. The fallibility of human calendars is but too well known; but from this bird's note the husbandman may be taught when to sow his most useful seeds, and do such work as depends upon a certain temperature of the air. These feathered guides come to us heaven taught, and point out the true commencement of the season.

The cuckoo, that was silent some time after its appearance, begins at first feebly, and at very distant intervals, to give its call, which, as the summer advances, improves both in its frequency and loud-

ness. This is an invitation to courtship, and used only by the male, who sits generally perched, upon some dead tree, or bare bough, and repeats his song, which he loses as soon as the genial season is over. His note is pleasant though uniform; and, from an association of ideas, seldom occurs to the memory without reminding us of the sweets of summer. Custom too has affixed a more ludicrous association to this note; which, however, we that are bachelors need be in no pain about. This reproach seems to arise from this bird's making use of the bed or nest of another to deposit its own brood in.

However this may be, nothing is more certain than that the female makes no nest of her own. She repairs for that purpose to the nest of some other bird, generally the water-wagtail or the hedge-sparrow, and having devoured the eggs of the owner, lays her own in their place. She usually lays but one, which is speckled and of the size of a blackbird's. This the fond foolish bird hatches with great assiduity, and when excluded finds no difference in the great ill-loooking changeling from her own. To supply this voracious creature, the credulous nurse toils with unusual labour, no way sensible that she is feeding up an enemy to her race, and one of the most destructive robbers of her future progeny.

It was once doubted whether these birds were carnivorous; but Reaumur was at the pains of breeding up several, and found that they would not feed upon bread and corn, but flesh and insects were their favourite nourishment. He found it a very difficult task to teach them to peck; for he was obliged to feed them for a full month after they were grown as big as the mother. Insects, however, seemed to be their peculiar food when young; for they devoured flesh by a kind of constraint, as it was always put into their mouths; but meal-worm insects they flew

to, and swallowed of their own accord most greedily. Indeed, their gluttony is not to be wondered at when we consider the capacity of their stomach, which is enormous, and reaches from the breast-bone to the vent. It is partly membranous, partly muscular, and of a prodigious capacity; yet still they are not to be supposed as birds of prey, for they have neither the strength nor the courage. On the contrary, they are naturally weak and fearful, as appears by their flying from small birds, which every where pursue them. The young birds are brown mixed with black; and in that state they have been described by some authors as old ones.

The cuckoo, when fledged and fitted for flight, follows its supposed parent but for a little time; its appetites for insect food increasing, as it finds no great chance for a supply in imitating its little conductor, it parts good friends, the step-child seldom offering any violence to its nurse. Nevertheless, all the little birds of the grove seem to consider the young cuckoo as an enemy, and revenge the cause of their kind by their repeated insults. They pursue it wherever it flies, and oblige it to take shelter in the thickest branches of some neighbouring tree. All the smaller birds form the train of its pursuers; but the wry-neck, in particular, is found the most active in the chace; and from thence it has been called by many, the cuckoo's attendant and provider. But it is very far from following with a friendly intention; it only pursues as an insulter, or a spy, to warn all its little companions of the cuckoo's depredations.

[In the Philosophical Transactions for 1788, there is a very curious paper on the natural history of this bird, by the celebrated Dr. Jenner.—"The cuckoo makes its first appearance in England about the middle of April. Like other migrating birds, the female does not begin to lay till some weeks af-

ter her arrival; but, unlike all other birds, she provides no nest, and does not hatch her own eggs. The hedge-sparrow, the water-wagtail, the tit-lark, the red-breast, the yellow-hammer, the green-linnet, or the whinchat, is generally the nurse of the young cuckoo. The three first are often selected, but a greatef partiality is shown for the nest of the hedge-sparrow. This last commonly takes up four or five days in laying her eggs. During this time (generally after she has laid one or two) the cuckoo contrives to deposit her egg among the rest, leaving the future care of it entirely to the hedge-sparrow. When this bird has sat her usual time, and disengaged the young cuckoo and some of her own offspring from the shell, her own young ones, and any of her eggs that remain unhatched, are soon turned out, the young cuckoo remaining possessor of the nest, and sole object of her future care. The young birds are not previously killed, nor are the eggs demolished; but all are left to perish together, either entangled about the bush which contains the nest, or lying on the ground under it.

"The early fate of the young hedge-sparrows," Dr. Jenner continues, "is a circumstance that has been noticed by others, but attributed to wrong causes. A variety of conjectures have been formed upon it. Some have supposed the parent cuckoo the author of their destruction; while others, as erroneously, have pronounced them smothered by the disproportionate size of their fellow-nestling.

"I examined the nest of a hedge-sparrow on the 18th of June 1787, which then contained a cuckoo's and three hedge-sparrow's eggs. On inspecting it the day following, I found the bird had hatched, but that the nest now contained only a young cuckoo and one young hedge-sparrow. The nest was placed so near the extremity of a hedge, that I could distinct-

ly see what was going forward in it; and, to my astonishment, saw the young cuckoo, though so newly hatched, in the act of turning out the young hedge-sparrow.—The mode of acomplishing this was very curious: The little animal, with the assistance of its rump and wings, contrived to get the bird upon its back, and making a lodgement for the burden by elevating its elbows, clambered backward with it up the side of the nest till it reached the top, where, resting for a moment, it threw off its load with a jerk, and quite disengaged it from the nest. It remained in this situation a short time, feeling about with the extremities of its wings, as if to be convinced whether the business was properly executed, and then dropped into the nest again. With these (the extremities of its wings) I have often seen it examine, as it were, an egg and nestling before it began its operations; and the nice sensibility which these parts appeared to possess, seemed sufficiently to compensate the want of sight, which as yet it was destitute of. I afterwards put in an egg; and this, by a similar process, was conveyed to the edge of the nest, and thrown out. These experiments I have since repeated several times in different nests, and have always found the young cuckoo disposed to act in the same manner. In climbing up the nest it sometimes drops its burden, and thus is foiled in its endeavours; but, after a little respite, the work is resumed, and goes on almost incessantly till it is effected. It is wonderful to see the extraordinary exertions of the young cuckoo, when it is two or three days old, if a bird be put into the nest with it that is too weighty for it to lift out. In this state it seems ever restless and uneasy. But this disposition for turning out its companion begins to decline, from the time it is two or three, till it is about twelve days old, when, as far as I have hitherto seen, it ceases.

Indeed the disposition for throwing out the egg appears to cease a few days sooner; for I have frequently seen the young cuckoo, after it had been hatched nine or ten days, remove a nestling that had been placed in the nest with it, when it suffered an egg, put there at the same time, to remain unmolested. The singularity of its shape is well adapted to these purposes; for, different from other newly hatched birds, its back, from the scapulæ downwards, is very broad, with a considerable depression in the middle. This depression seems formed by nature for the design of giving a more secure lodgement to the egg of the hedge-sparrow or its young one, when the young cuckoo is employed in removing either of them from the nest. When it is about twelve days old this cavity is quite filled up, and then the back assumes the shape of nestling birds in general."

It appears a little extraordinary that two cuckoos' eggs should ever be deposited in the same nest, as the young one produced from one of them must inevitably perish; yet two instances of this kind fell under Dr. Jenner's observation, one of which he thus relates: "June 27, 1787. Two cuckoos and a hedge-sparrow were hatched in the same nest this morning; one hedge-sparrow's egg remained unhatched. In a few hours after, a contest began between the cuckoos for the possession of the nest, which continued undetermined till the next afternoon, when one of them, which was somewhat superior in size, turned out the other, together with the young hedge-sparrow and the unhatched egg. This contest was very remarkable. The combatants alternately appeared to have the advantage, as each carried the other several times nearly to the top of the nest, and then sunk down again, oppressed by the weight of its burden; till at length, after various efforts, the strongest prevailed, and was afterwards brought up by the hedge-sparrow."

In considering to what causes the singularities of the cuckoo may be attributed, the Doctor suggests the following as the most probable: "The short residence this bird is allowed to make in the country where it is destined to propagate its species, and the call that nature has upon it, during that short residence, to produce a numerous progeny. The cuckoo's first appearance here is about the middle of April, commonly on the 17th. Its egg is not ready for incubation till some weeks after its arrival, seldom before the middle of May. A fortnight is taken up by the sitting-bird in hatching the egg. The young bird generally continues three weeks in the nest before it flies, and the foster-parents feed it more than five weeks after this period; so that if a cuckoo should be ready with an egg much sooner than the time pointed out, not a single nestling, even one of the earliest, would be fit to provide for itself before its parent would be instinctively directed to seek a new residence, and be thus compelled to abandon its young one; for old cuckoos take their final leave of this country the first week in July."]

Such are the manners of this bird while it continues to reside, or to be seen amongst us. But early, at the approach of winter, it totally disappears, and its passage can be traced to no other country. Some suppose that it lies hid in hollow trees, and others that it passes into warmer climates. Which of these opinions is true is very uncertain, as there are no facts related on either side that can be totally relied on. To support the opinion that they remain torpid during the winter at home, Willoughby introduces the following story, which he delivers upon the credit of another. "The servants of a gentleman in the country, having stocked up, in one of their meadows, some old dry rotten willows, thought proper, on a certain occasion, to carry them home. In heating

a stove, two logs of this timber were put into the furnace beneath, and fire applied as usual. But soon, to the great surprise of the family, was heard the voice of a cuckoo, singing three times from under the stove. Wondering at so extraordinary a cry in winter time, the servants ran and drew the willow logs from the furnace, and in the midst of one of them saw something move; wherefore, taking an axe, they opened the hole, and thrusting in their hands, first they plucked out nothing but feathers; afterwards they got hold of a living animal, and this was the cuckoo that had waked so very opportunely for its own safety. It was, indeed," continues our historian, " brisk and lively, but wholly naked and bare of feathers, and without any winter provision in its hole. This cuckoo the boys kept two years afterwards alive in the stove; but whether it repaid them with a second song, the author of the tale has not thought fit to inform us."

The most probable opinion on this subject is, that as quails and woodcocks shift their habitations in winter, so also does the cuckoo; but to what country it retires, or whether it has been ever seen on its journey, are questions that I am wholly incapable of resolving.

Of this bird there are many kinds in various parts of the world, not only differing in their colours but their size. Brisson makes not less than twenty-eight sorts of them; but what analogy they bear to the English cuckoo, I will not take upon me to determine. He talks of one, particularly, of Brasil, as making a most horrible noise in the forests; which, as it should seem, must be a very different note from that by which our bird is distinguished at home.

[The following description of the Indicator, or Honey-Guide, (sometimes called the Moroc,) is given by Dr. Sparrman in the Philosophical Trans-

actions for 1777. " This curious species of cuckoo is found at a considerable distance from the Cape of Good Hope, in the interior parts of Africa. Its colour has nothing striking or beautiful. Its size is considerably smaller than that of our cuckoo in Europe; but in return, the instinct which prompts it to seek its food in a singular manner, is truly admirable. Not only the Dutch and Hottentots, but likewise a species of quadruped named *ratel*, (probably a species of badger,) are frequently conducted to wild bee-hives by this bird, which, as it were, pilots them to the very spot. The honey being its favourite food, its own interest prompts it to be instrumental in robbing the hive, as some scraps are commonly left for its support. The morning and evening are its times of feeding, and it is then heard calling in a shrill tone, *cherr, cherr;* which the honey-hunters carefully attend to as the summons to the chase. From time to time they answer with a soft whistle, which the bird hearing, always continues its note. As soon as they are in sight of each other, the bird gradually flutters towards the place where the hive is situated, continually repeating its former call of *cherr, cherr.* nay, if it should happen to have gained a considerable way before the men, (who may easily be hindered in the pursuit by bushes, rivers, or the like,) it returns to them again, and redoubles its note, as it were to reproach them with their inactivity. At last the bird is observed to hover for a few moments over a certain spot, and then silently retiring to a neighbouring bush or resting-place, the hunters are sure of finding the bees' nest in that identical spot, whether it be in a tree, or in the crevice of a rock, or (as is most commonly the case) in the earth. Whilst the hunters are busy in taking the honey, the bird is seen looking on attentively to what is going forward, and waiting for its share of the spoil. The bee-hun-

ters never fail to leave a small portion for their conductor; but commonly take care not to leave so much as would satisfy its hunger. The bird's appetite being whetted by this parsimony, it is obliged to commit a second treason, by discovering another bees' nest, in hopes of a better salary. It is further observed, that the nearer the bird approaches the hidden hive, the more frequently it repeats its call, and seems the more impatient. I have had frequent opportunities of seeing this bird, and have been witness to the destruction of several republics of bees by means of its treachery. I had, however, but two opportunities of shooting it, which I did to the great indignation of my Hottentots. These were about seven inches in length, and of a rusty brown colour on the back, with white breast and belly."]

CHAPTER VII.

OF THE PARROT, AND ITS AFFINITIES.

THE Parrot is the best known among us of all foreign birds, as it unites the greatest beauty with the greatest docility. Its voice also is more like a man's than that of any other; the raven is too hoarse, and the jay and magpie too shrill, to resemble the truth; the parrot's note is of the true pitch, and capable of a number of modulations that even some of our orators might wish in vain to imitate.

The ease with which this bird is taught to speak, and the great number of words which it is capable of repeating, are no less surprising. We are assured by a grave writer, that one of these was taught to repeat a whole sonnet from Petrarch; and, that I may not be wanting in my instance, I have seen a

parrot belonging to a distiller, who had suffered pretty largely in his circumstances from an informer who lived opposite him, very ridiculously employed. This bird was taught to pronounce the ninth commandment, *Thou shalt not bear false witness against thy neighbour*, with a very clear, loud, articulate voice. The bird was generally placed in its cage over-against the informer's house, and delighted the whole neighbourhood with its persevering exhortations.

Willoughby tells a story of a parrot, which is not so dull as those usually brought up when the bird's facility of talking happens to be the subject. "A parrot belonging to King Henry the Seventh, who then resided at Westminster, in his palace by the river Thames, had learned to talk many words from the passengers as they happened to take water. One day sporting on its perch, the poor bird fell into the water, at the same time crying out as loud as he could, *A boat! twenty pounds for a boat!* A waterman who happened to be near, hearing the cry, made to the place where the parrot was floating, and taking him up, restored him to the king. As it seems the bird was a favourite, the man insisted that he ought to have a reward rather equal to his services than his trouble; and as the parrot had cried twenty pounds, he said the king was bound in honour to grant it. The king at last agreed to leave it to the parrot's own determination, which the bird hearing, cried out *Give the knave a groat.*"

The parrot, which is so common as a foreign bird wth us, is equally so as an indigenous bird in the climates where it is produced. The forests swarm with them; and the rook is not better known with us than the parrot in almost every part of the East and West Indies. It is in vain that our naturalists have attempted to arrange the various species of this

bird; new varieties daily offer to puzzle the system-maker, or to demonstrate the narrowness of his catalogues. Linnæus makes the number of its varieties amount to forty-seven; while Brisson doubles the number, and extends his catalogue to ninety-five. Perhaps even this list might be increased, were every accidental change of colour to be considered as constituting a new species. But, in fact, natural history gains little by these discoveries; and as its dominions are extended, it becomes more barren. It is asserted by sensible travellers, that the natives of Brasil can change the colour of a parrot's plumage by art. If this be true, and I am apt to believe the information, they can make new species at pleasure, and thus cut out endless work for our nomenclators at home.

Those who usually bring these birds over, are content to make three or four distinctions, to which they give names; and with these distinctions I will content myself also. The large kind, which are of the size of a raven, are called Maccaws; the next size are simply called Parrots; those which are entirely white are called Lories; and the lesser size of all are called Parakeets. The difference between even these is rather in the size than in any other peculiar conformation, as they are all formed alike, having toes, two before and two behind, for climbing and holding; strong hooked bills for breaking open nuts, and other hard substances, on which they feed; and loud harsh voices, by which they fill their native woods with clamour.

But there are further peculiarities in their conformation; and first, their toes are contrived in a singular manner, which appears when they walk or climb, and when they are eating. For the first purpose they stretch two of their toes forward and two backward; but when they take their meat, and bring it to their

months with their foot, they dexterously and nimbly turn the greater hind toe forward, so as to take a firmer grasp of the nut or the fruit they are going to feed on, standing all the while upon the other leg. Nor even do they present their food in the usual manner; for other animals turn their meat inwards to the mouth, but these, in a seemingly awkward position, turn their meat outwards, and thus hold the hardest nuts, as if in one hand, till with their bills they break the shell, and extract the kernel.

The bill is fashioned with still greater peculiarities; for the upper chap, as well as the lower, are both moveable. In most other birds the upper chap is connected, and makes but one piece with the skull; but in these, and in one or two species of the feathered tribe more, the upper chap is connected to the bone of the head by a strong membrane placed on each side, that lifts and depresses it at pleasure. By this contrivance they can open their bills the wider; which is not a little useful, as the upper chap is so hooked and so overhanging, that if the lower chap only had motion, they could scarcely gape sufficiently to take any thing in for their nourishment.

Such are the uses of the beak and the toes when used separately, but they are often employed both together when the bird is exercised in climbing. As these birds cannot readily hop from bough to bough, their legs not being adapted for that purpose, they use both the beak and the feet: first catching hold with the beak, as if with a hook, and drawing up the legs and fastening them, then advancing the head and beak again, and so putting forward the body and the feet alternately, till they attain the height they aspire to.

The tongue of this bird somewhat resembles that of a man; for which reason some pretend that it is well qualified to imitate the human speech; but the

organs by which these sounds are articulated lie farther down in the throat, being performed by the great motion which the *os hyoides* has in these birds above others.

The parrot, though common enough in Europe, will not, however, breed here. The climate is too cold for its warm constitution; and though it bears our winter when arrived at maturity, yet it always seems sensible of its rigour, and loses both its spirit and appetite during the colder part of the season. It then becomes torpid and inactive, and seems quite changed from that bustling loquacious animal which it appeared in its native forests, where it is almost ever upon the wing. Notwithstanding, the parrot lives even with us a considerable time, if it be properly attended to; and, indeed, it must be owned, that it employs but too great a part of some people's attention.

The extreme sagacity and docility of the bird may plead as the best excuse for those who spend whole hours in teaching their parrots to speak; and, indeed, the bird, on those occcasions, seems the wisest animal of the two. It at first obstinately resists all instruction; but seems to be won by perseverance, makes a few attempts to imitate the first sounds, and when it has got one word distinct, all the succeeding come with greater facility. The bird generally learns most in those families where the master or mistress have the least to do; and becomes more expert in proportion as its instructors are idly assiduous. In going through the towns of France some time since, I could not help observing how much plainer their parrots spoke than ours, and how very distinctly I understood their parrots speak French, when I could not understand our own, though they spoke my native language. I was at first for ascribing it to the different qualities of the two languages, and was for

entering into an elaborate discussion on the vowels and consonants; but a friend that was with me solved the difficulty at once, by assuring me that the French women scarcely did any thing else the whole day than sit and instruct their feathered pupils; and that the birds were thus distinct in their lessons in consequence of continual schooling.

The parrots of France are certainly very expert, but nothing to those of the Brasils, where the education of a parrot is considered as a very serious affair. The history of Prince Maurice's parrot, given us by Mr. Locke, is too well known to be repeated here; but Clusius assures us, that the parrots of that country are the most sensible and cunning of all animals not endued with reason. The great parrot, called the *Aicurous*, the head of which is adorned with yellow, red, and violet, the body green, the ends of the wings red, the feathers of the tail long and yellow; this bird, he asserts, which is seldom brought into Europe, is a prodigy of understanding. "A certain Brasilian woman, that lived in a village two miles distant from the island on which we resided, had a parrot of this kind which was the wonder of the place. It seemed endued with such understanding, as to discern and comprehend whatever she said to it. As we sometimes used to pass by that woman's house, she used to call upon us to stop, promising, if we gave her a comb, or a looking-glass, that she would make her parrot sing and dance to entertain us. If we agreed to her request, as soon as she had pronounced some words to the bird, it began not only to leap and skip on the perch on which it stood, but also to talk and to whistle, and imitate the shoutings and exclamations of the Brasilians when they prepare for battle. In brief, when it came into the woman's head to bid it sing, it sang; to dance, it danced. But if, contrary to our promise, we refused to give

the woman the little present agreed on, the parrot seemed to sympathize in her resentment, and was silent and immoveable; neither could we, by any means, provoke it to move either foot or tongue."

This sagacity which parrots show in a domestic state, seems also natural to them in their native residence among the woods. They live together in flocks, and mutually assist each other against other animals, either by their courage or their notes of warning. They generally breed in hollow trees, where they make a round hole, and do not line their nests within. If they find any part of a tree beginning to rot from the breaking off of a branch, or any such accident, this they take care to scoop, and to make the hole sufficiently wide and convenient; but it sometimes happens that they are content with the hole which a woodpecker has wrought out with greater ease before them; and in this they prepare to hatch and bring up their young.

They lay two or three eggs; and probably the smaller kind may lay more; for it is a rule that universally holds through nature, that the smallest animals are always the most prolific; for being, from their natural weakness, more subject to devastation, nature finds it necessary to replenish the species by superior fecundity. In general, however, the number of their eggs is stinted to two, like those of the pigeon, and they are about the same size. They are always marked with little specks, like those of a partridge; and some travellers assure us, that they are always found in the trunks of the tallest, straightest, and the largest trees. The natives of these countries, who have little else to do, are very assiduous in spying out the places where the parrot is seen to nestle, and generally come with great joy to inform the Europeans, if there be any, of the discovery. As those birds have always the greatest

docility that are taken young, such a nest is often considered as worth taking some trouble to be possessed of; and for this purpose the usual method of coming at the young is by cutting down the tree. In the fall of the tree it often happens that the young parrots are killed; but if one of them survives the shock, it is considered as a sufficient recompense.

Such is the avidity with which these birds are sought when young; for it is known they always speak best when their ear has not been anticipated by the harsh notes of the wild ones. But as the natives are not able upon all occasions to supply the demand for young ones, they are contented to take the old; and for that purpose shoot them in the woods with heavy arrows, headed with cotton, which knock down the bird without killing it. The parrots thus stunned are carried home: some die, but others recover, and, by kind usage and plentiful food, become talkative and noisy.

But it is not for the sake of their conversation alone that the parrot is sought after among the savages; for though some of them are but tough and ill-tasted, yet there are other sorts, particularly of the small parakeet tribe, that are very delicate food. In general it obtains, that whatever fruit or grain these birds mostly feed upon, their flesh partakes of the flavour, and becomes good or ill-tasted according to the quality of that particular diet. When the guava is ripe, they are at that season fat and tender; if they feed upon the seed of the acajou, their flesh contracts an agreeable flavour of garlic; if they feed upon seed of the spicy trees, their flesh then tastes of cloves and cinnamon; while, on the contrary, it is insupportably bitter if the berries they feed on are of that quality. The seed of the cotton tree intoxicates them in the same manner that wine does man; and even wine itself is drunk by parrots.

as Aristotle assures us, by which they are thus rendered more talkative and amusing. But of all food, they are fondest of the carthamus or bastard saffron; which, though strongly purgative to man, agrees perfectly with their constitution, and fattens them in a very short time.

Of the parakeet kind in Brasil, Labat assures us, that they are the most beautiful in their plumage, and the most talkative birds in nature. They are very tame, and appear fond of mankind; they seem pleased with holding parley with him; they never have done; but while he continues to talk, answer him, and appear resolved to have the last word: but they are possessed of another quality which is sufficient to put an end to this association; their flesh is the most delicate imaginable, and highly esteemed by those who are fonder of indulging their appetites than their ears. The fowler walks into the woods, where they keep in abundance; but as they are green, and exactly the colour of the leaves among which they sit, he only hears their prattle, without being able to see a single bird: he looks round him, sensible that his game is within gun-shot in abundance, but is mortified to the last degree that it is impossible to see them. Unfortunately for these little animals, they are restless and ever on the wing, so that in flying from one tree to another he has but too frequent opportunities of destroying them: for as soon as they have stripped the tree on which they sate of all its berries, some one of them flies off to another; and, if that be found fit for the purpose, it gives a loud call, which all the rest resort to. That is the opportunity the fowler has long been waiting for; he fires in among the flock while they are yet on the wing, and he seldom fails of bringing down a part of them. But it is singular enough to see them when they find their companions fallen. They set

up a loud outcry, as if they were chiding their destroyer, and do not cease till they see him preparing for a second charge.

But though there are so many motives for destroying these beautiful birds, they are in very great plenty; and in some countries on the coast of Guinea, they are considered by the Negroes as their greatest tormentors. The flocks of parrots persecute them with their unceasing screaming, and devour whatever fruits they attempt to produce by art in their little gardens. In other places they are not so destructive, but sufficiently common; and, indeed, there is scarcely a country of the tropical climates that has not many of the common kind, as well as some peculiarly its own. Travellers have counted more than a hundred different kinds on the continent of Africa only: there is one country in particular, north of the Cape of Good Hope, which takes its name from the multitude of parrots which are seen in its woods. There are white parrots seen in the burning regions of Ethiopia; in the East Indies, they are of the largest size; in South America, they are docile and talkative; in all the islands of the Pacific Sea and the Indian Ocean, they swarm in great variety and abundance, and add to the splendour of those woods which nature has dressed in eternal green.

So generally are these birds known at present, and so great is their variety, that nothing seems more extraordinary than that there was but one sort of them known among the ancients, and that at a time when they pretended to be masters of the world. If nothing else could serve to show the vanity of a Roman's boast, the parrot tribe might be an instance, of which there are a hundred kinds now known, not one of which naturally breeds in the countries that acknowledged the Roman power. The green para-

keet, with a red neck, was the first of this kind that was brought into Europe, and the only one that was known to the ancients from the time of Alexander the Great to the age of Nero. This was brought from India; and when afterwards the Romans began to seek and rummage through all their dominions for new and unheard-of luxuries, they at last found out others in Gaganda, an island of Ethiopia, which they considered as an extraordinary discovery.

Parrots have usually the same disorders with other birds; and they have one or two peculiar to their kind. They are sometimes struck by a kind of apoplectic blow, by which they fall from their perches, and for awhile seem ready to expire. The other is the growing of the beak, which becomes so very much hooked as to deprive them of the power of eating. These infirmities, however, do not hinder them from being long-lived; for a parrot, well kept, will live five or six-and-twenty years.

CHAPTER VIII.

THE PIGEON, AND ITS VARIETIES.

THIS is one of the birds which, from its great fecundity, we have, in some measure, reclaimed from a state of nature, and taught to live in habits of dependence. Indeed, its fecundity seems to be increased by human cultivation, since those pigeons that live in a wild state, in the woods, are by no means so fruitful as those in our pigeon-houses nearer home. The power of increase in most birds depends upon the quantity of their food; and it is seen, in more than one instance, that man, by sup-

plying food in plenty, and allowing the animal at the same time a proper share of freedom, has brought some of those kinds which are known to lay but once a-year, to become much more prolific.

The tame pigeon, and all its beautiful varieties, derive their origin from one species, the Stock-Dove only; the English name, implying its being the stock or stem from whence the other domestic kinds have been propagated. This bird, in its natural state, is of a deep bluish ash colour; the breast dashed with a fine changeable green and purple; its wings marked with two black bars; the back white, and the tail barred near the end with black. These are the colours of the pigeon in a state of nature; and from these simple tints has man by art propagated a variety that words cannot describe, nor even fancy suggest. However, nature still perseveres in her great outline; and though the form, colour, and even the fecundity of these birds may be altered by art, yet their natural manners and inclinations continue still the same.

The stock-dove, in its native woods, differs from the ring-dove, a bird that has never been reclaimed, by its breeding in the holes of rocks and the hollows of trees. All other birds of the pigeon kind build, like rooks, in the topmost branches of the forest, and choose their habitation as remote as possible from man. But this species soon takes to build in artificial cavities; and from the temptation of a ready provision and numerous society, easily submits to the tyranny of man. Still, however, it preserves its native colour for several generations, and becomes more variegated only in proportion as it removes from the original simplicity of its colouring in the woods

The dove-house pigeon, as is well known, breeds every month; but then it is necessary to supply it with

food when the weather is severe, or the fields are covered with snow. Upon other occasions it may be left to provide for itself; and it generally repays the owner for his protection. The pigeon lays two white eggs, which most usually produce young ones of different sexes. For the laying of each egg, it is necessary to have a particular congress with the male; and the egg is usually deposited in the afternoon. When the eggs are thus laid, the female, in the space of fifteen days, not including the three days during which she is employed in laying, continues to hatch, relieved at intervals by the male. The turns are usually regulated with great exactness. From three or four o'clock in the evening, till nine the next day, the female continues to sit; she is then relieved by the male, who takes his place from ten till three, while his mate is feeding abroad. In this manner they sit alternately till the young are excluded. If, during this term, the female delays to return at the expected time, the male follows and drives her to the nest; and should he in his turn be dilatory, she retaliates with equal severity.

The young ones when hatched require no food for the three first days, only wanting to be kept warm, which is an employment the female takes entirely upon herself. During this period she never stirs out, except for a few minutes to take a little food. From this they are fed for eight or ten days, with corn or grain of different kinds, which the old ones gather in the fields, and keep treasured up in their crops, from whence they throw it up again into the mouths of their young ones, who very greedily demand it.

As this method of feeding the young from the crop is different in birds of the pigeon kind from all others, it demands a more detailed explanation. Of all birds, for its size, the pigeon has the largest crop,

which is also made in a manner quite peculiar to the kind. In two of these that were dissected by a member of the Royal Academy of Sciences, it was found, that if the anatomists blew air into the windpipe, it distended the crop or gullet to a prodigious size. This was the more extraordinary, as there seemed to be no communication whatever between these two receptacles; as the conduit by which we breathe, as every one knows, leads to a very different receptacle from that where we put our food. By what apertures the air blown into the lungs of the pigeon makes its way into the crop is unknown; but nothing is more certain than that these birds have a power of filling the crop with air; and some of them, which are called croppers, distend it in such a manner that the bird's breast seems bigger than its body. The peculiar mechanism of this part is not well known, but the necessity for it in these animals is pretty obvious. The pigeon, as we all know, lives entirely upon grain and water; these are mixed together in the crop, and in the ordinary way are digested in proportion as the bird lays in its provision. But to feed its young, which are very voracious, it is necessary to lay in a store greater than ordinary, and to give the food a kind of half maceration to suit their tender appetites. The heat of the bird's body, assisted by air, and numerous glands separating a milky fluid, are the most necessary instruments for this operation; but in proportion as the food macerates, it begins to swell also, and the crop must of consequence be considerably dilated. Still, however, the air which is contained in it gives the bird a power of contracting it at pleasure; for if it were filled with more solid substances, the bird could have no power to compress it. But this is not the case; the bird can compress its crop at pleasure, and driving out the air, can thus drive out the food also, which

is forced up the gullet like a pellet from a pop-gun. The young ones open-mouthed receive this tribute of affection, and are thus fed three times a-day. In feeding, the male usually supplies the young female, while the old female supplies the young of the opposite sex. The food with which they are supplied is more macerated in the beginning; but as they grow older, the parents give it less preparation, and at last drive them out to shift for themselves. When well fed, however, the old ones do not wait for the total dismission of their young; but in the same nest are to be found young ones, almost fit for flight, and eggs hatching at the same time.

The fidelity of the turtle-dove is proverbial, and makes the usual comparison of such poets as are content to repeat what others have said before them; but the pigeon of the dove-house is not so faithful; and, having been subjected to man, it puts on licentiousness among its other domestic habits. Two males are often seen quarrelling for the same mistress; and when the female admits the addresses of a new gallant, her old companion seems to bear the contempt with some marks of displeasure, abstaining from her company, or, if he approaches, it is only to chastise her. There have been instances when two males, being displeased with their respective mates, have thought proper to make an exchange, and have lived in great harmony with their new companions.

So great is the produce of this bird in its domestic state, that near fifteen thousand may, in the space of four years, be produced from a single pair. But the stock-dove seldom breeds above twice a-year; for, when the winter months come, the whole employment of the fond couple is rather for self-preservation than transmitting a posterity. They seem, however, to have a stronger attachment to their

young than those who are found to breed so often; whether it be that instinct acts more powerfully upon them in their state of nature, or that their affections are less divided by the multiplicity of claims, is doubtful.

It is from a species of these, therefore, that those pigeons which are called *Carriers*, and are used to convey letters, are produced. These are easily distinguished from all others by their eyes, which are compassed about with a broad circle of naked white skin, and by being of a dark blue or blackish colour. It is from their attachment to their native place, and particularly where they have brought up their young, that these birds are employed in several countries as the most expeditious carriers. They are first brought from the place where they were bred, and whither it is intended to send them back with information. The letter is tied under the bird's wing, and it is then let loose to return. The little animal no sooner finds itself at liberty, than its passion for its native spot directs all its motions. It is seen, upon these ocasions, flying directly into the clouds to an amazing height; and then, with the greatest certainty and exactness, directing itself by some surprising instinct towards home, which lies sometimes at many miles distance, bringing its message to those to whom it is directed. By what marks they discover the place, by what chart they are guided in the right way, is to us utterly unknown; certain it is, that in the space of an hour and a half they perform a journey of forty miles, which is a degree of despatch three times greater than the fleetest quadruped can perform. These birds are not brought up at present with so much care as formerly, when they were sent from governors in a besieged city to generals that were coming to relieve it without; when they were sent from princes to their subjects with

the tidings of some fortunate event, or from lovers to their mistresses with expressions of their passion. The only use we now see made of them, is to be let fly at Tyburn when the cart is drawn away; pretty much as, when some ancient hero was to be interred, an eagle was let off from the funeral pile, to complete his apotheosis.

The varieties of the tame pigeon are so numerous that it would be a vain attempt to mention them: so much is the figure and colour of this bird under human control, that pigeon-fanciers, by coupling a male and female of different sorts, can breed them, as they express it, to a feather. From hence we have the various names of Croppers, Carriers, Jacobines, Powters, Runts, and Turbits; all birds that at first might have accidentally varied from the stock-dove; and then, by having these varieties still heightened by food, climate, and pairing, different species have been produced. But there are many species of the wild pigeon which, though bearing a strong affinity to the stock-dove, are, nevertheless, sufficiently different from it to deserve a distinct description. The Ring-dove is of this number; a good deal larger than the former, and building its nest with a few dry sticks in the boughs of trees. This seems a bird much fonder of its native freedom than the former, and attempts have been frequently made to render it domestic, but they have hitherto proved fruitless; for, though their eggs have been hatched by the tame pigen in a dove-house, yet, as soon as they could fly, they always betook themselves to the woods where they were first produced. In the beginning of winter these assemble in great flocks in the woods, and leave off cooing; nor do they resume this note of courtship till the beginning of March, when the genial season, by supplying them with food, renews their desires.

The turtle-dove is a smaller, but a much shyer bird than any of the former. It may easily be distinguished from the rest by the iris of the eye, which is of a fine yellow, and by a beautiful crimson circle that encompasses the eye-lids. The fidelity of these birds is noted; and a pair being put in a cage, if one dies, the other will not survive it. The turtle-dove is a bird of passage, and few or none remain in our northern climates in winter. They fly in flocks when they come to breed here in summer, and delight in open, mountainous, sandy countries. But they build their nests in the midst of woods, and choose the most retired situations for incubation. They feed upon all sorts of grain, but are fondest of millet seed.

To this short list might be added a long catalogue of foreign pigeons, of which we know little more than the plumage and the names; indeed, the variety of their plumage is as beautiful as the names by which they are known are harsh and dissonant. The *Ocotzimtzcan*, for instance, is one of the most splendid tenants of the Mexican forests; but few, I believe, would desire to learn the name, only to be informed that it is covered with purple, green, and yellow plumage. To describe such birds, the historian's pen is not half such a useful implement as the painter's pencil.

PART IV.

OF BIRDS OF THE SPARROW KIND.

CHAPTER I.

OF BIRDS OF THE SPARROW KIND IN GENERAL.

STILL descending from the larger to the smaller, we come to birds of the sparrow kind; or that class of beautiful little annimals that, being less than the pigeon, go on diminishing till we arrive at the humming-bird, the smallest of the feathered creation.

The birds, which compose this class chiefly, live in the neighbourhood of man, and are his greatest favourites. The falcon may be more esteemed, and the turkey more useful; but these he considers as servants, not as friends; as animals reclaimed merely to supply him with some of the conveniences of life: but these little painted songsters have his affections, as well from their beauty as their melody; it is this delightful class that fill his groves with harmony, and lift his heart to sympathize with their raptures. All the other classes are either mute or screaming; it is this diminutive tribe only that have voices equal to the beauty of their figures; equally adapted to rejoice man, and delight each other.

As they are the favourites of man, so they are chiefly seen near him. All the great birds dread his vicinity, and keep to the thickest darkness of the forest, or the brow of the most craggy precipice; but these seldom resort to the thicker parts of the wood; they keep near its edges, in the neighbourhood of

cultivated fields; in the hedge-rows of farm grounds; and even in the yard, mixing with the poultry.

It must be owned, indeed, that their living near man, is not a society of affection on their part, as they approach inhabited grounds merely because their chief provision is to be found there. In the depth of the desert, or the gloom of the forest, there is no grain to be picked up; none of those tender buds that are so grateful to their appetites: insects, themselves, that make so great a part of their food, are not found there in abundance, their natures being unsuited to the moisture of the place. As we enter, therefore, deeper into uncultivated woods, the silence becomes more profound, every thing carries the look of awful stillness; there are none of those warblings, none of those murmurs that awaken attention, as near the habitations of men; there is nothing of that confused buzz, formed by the united though distant voices of quadrupeds and birds, but all is profoundly dead and solemn. Now and then, indeed, the traveller may be roused from this lethargy of life, by the voice of a heron, or the scream of an eagle; but his sweet little friends, the warblers, have totally forsaken him.

There is still another reason for these little birds avoiding the depths of the forest, which is, that their most formidable enemies usually reside there. The greater birds, like robbers, choose the most dreary solitudes for their retreats; and if they do not find, they make a desert all around them. The small birds fly from their tyranny, and take protection in the vicinity of man, where they know their more unmerciful foes will not venture to pursue them.

All birds, even those of passage, seem content with a certain district to provide food and centre in. The red-breast or the wren seldom leaves the field where it has been brought up, or where its young

have been excluded; even though hunted, it flies along the hedge, and seems fond of the place with an imprudent perseverance. The fact is, all these small birds mark out a territory to themselves, which they will permit none of their own species to remain in; they guard their dominions with the most watchful resentment; and we seldom find two mail tenants in the same hedge together.

Thus, though fitted by nature for the most wandering life, these little animals do not make such distant excursions, during the season of their stay, as the stag or the leveret. Food seems to be the only object that puts them in motion, and when that is provided for them in sufficient plenty, they never wander. But as that is seldom permanent through the year, almost every bird is then obliged to change its abode. Some are called birds of passage, because they are obliged to take long journeys for this purpose; but, strictly speaking, almost every other kind are birds of passage, though their migration may not be to places so remote. At some particular season of the year, all small birds migrate either from one country to another, or from the more inland provinces toward the shore.

There are several persons who get a livelihood by watching the seasons when our small birds begin to migrate from one country to another, and by taking them with nets in their passages. The birds are found to *fly*, as the bird-catchers term it, chiefly during the month of October, and part of September and November. There is also another flight in March, which is much less considerable than that in autumn. Nor is it less remarkable, that several of these species of flight-birds make their appearance in regular succession. The pippit, for instance, begins its flight every year about Michaelmas, when they are caught in greatest number. To this the

woodlark succeeds, and continues its flight till towards the middle of October; other birds follow, but are not so punctually periodical; the greenfinch does not begin till the frost obliges it to seek for a change. These birds, during those months, fly from day-break till twelve at noon; and there is afterwards a small flight from two till night. Such are the seasons of the migration of the birds which have been usually considered as stationary, and on these occasions they are caught in great abundance as they are on their journey. But the same arts used to allure them upon other occasions would be utterly fruitless, as they avoid the nets with the most prudent circumspection. The autumnal flight probably consists of the parents conducting their new-fledged young to those places where there is sufficient provision, and a proper temperament of the air during the winter season: and their return in spring is obviously from an attachment to the place which was found so convenient before for the purposes of nestling and incubation.

Autumn is the principal season when the bird-catcher employs his art to catch these wanderers. His nets are a most ingenious piece of mechanism, being generally twelve yards and a half long, and two yards and a half wide, and so contrived as from a flat position to rise on each side, and clap over the birds that are decoyed to come between them. The birds in their passage are always observed to fly against the wind, hence there is a great contention among the bird-catchers which shall gain the wind: for example, if it is westerly, the bird-catcher who lays his nets most to the east, is sure of the most plentiful sport, if his call-birds are good. For this purpose, he generally carries five or six linnets, two goldfinches, two greenfinches, one woodlark, one redpoll, and perhaps a bullfinch, a yellow-hammer,

a titlark, and an aberdavine: these are placed at small distances from the nets in little cages. He has besides what he calls his *flur birds*, which are placed upon a moveable perch, which the bird-catcher can raise at pleasure by means of a string; and these he always lifts gently up and down as the wild bird approaches. But this is not enough to allure the wild bird down: it must be called by one of the call-birds in the cages; and these, by being made to moult prematurely in a warm cage, call louder and better than those that are wild and at freedom. There even appears a malicious joy in these call-birds to bring the wild ones into the same state of captivity, while at the same time their call is louder and their plumage brighter than in a state of nature. Nor is their sight or hearing less exquisite, far exceeding that of the bird-catcher; for the instant the wild birds are perceived, notice is given by one to the rest of the call-birds, who all unite in the same tumultuous ecstasy of pleasure. The call-birds do not sing upon those occasions as a bird does in a chamber, but incite the wild ones by short jerks, which, when the birds are good, may be heard at a great distance.

The allurement of this call is so great, that the wild bird hearing it is stopped in its most rapid flight; and, if not already acquainted with the nets, lights boldly within twenty yards perhaps of the bird-catcher, and on a spot which it would otherwise have quite disregarded. This is the oportunity wished for, and the bird-catcher pulling a string, the nets on each side rise in an instant, and clap directly down on the poor little unsuspecting visitant. Nay, it frequently happens that if half a flock only are caught, the remaining half will immediately afterwards light between the nets, and share the fate of their companions. Should only one bird escape, this unhappy survivor will also venture into danger till it is

caught;—such a fascinating power have the call-birds.

Indeed, it is not easy to account for the nature of this call, whether it be a challenge to combat, an invitation to food, or a prelude to courtship. As the call-birds are all males, and as the wild birds that attend to their voice are most frequently males also, it does not seem that love can have any influence in their assiduity. Perhaps the wild females, in these flights, attend to and obey the call below, and the male companions of their flight come down to bear them company. If this be the case, and that the females have unfaithfully led their mates into the nets, they are the first that are punished for their infidelity; the males are only made captives for singing, while the females are indiscriminately killed, and sold to be served up to the tables of the delicate.

Whatever be the motives that thus arrest a flock of birds in their flight, whether they be those of gallantry or of war, it is certain that the small birds are equally remarkable for both. It is, perhaps, the genial desire that inspires the courage of most animals; and that being greatest in the males, gives them a greater degree of valour than the females. Small birds, being extremely amorous, are remarkably brave. However contemptible these little warriors are to larger creatures, they are often but too formidable to each other, and sometimes fight till one of them yields up his life with the victory. But their contentions are sometimes of a gentler nature. Two male birds shall strive in song, till, after a long struggle, the loudest shall entirely silence the other. During these contentions, the female sits an attentive silent auditor, and often rewards the loudest songster with her company during the season.

Singing among birds is almost universally the prerogative of the male. With them it is the reverse

of what occurs in the human kind. Among the feathered tribe, the heaviest cares of life fall to the lot of the female. Hers is the fatigue of incubation, and to her devolves the principal fatigue of nursing the helpless brood. To alleviate these fatigues, and to support her under them, nature has given the song to the male. This serves as a note of blandishment at first to attract her affections; it serves as a note to delight her during the time of her incubation; but it serves still farther as a note of security, to assure her that no danger threatens to molest her. The male, while his mate is hatching, sits upon some neighbouring tree, continuing at once to watch and to sing. While his voice is heard, the female rests in confident security; and, as the poet expresses it, appears *most blessed, when most unseen;* but if any appearance of danger offers to intrude, the male, that a moment before was so loud and sportive, stops all of sudden; and this is a most certain signal to his mate to provide for her own security.

The nest of little birds seems to be of a more delicate contrivance than that of the larger kinds. As the volume of their bodies is smaller, the materials of which their nests are composed are generally warmer. It is easy to conceive that small things keep heat a shorter time than those that are large. The eggs, therefore, of small birds, require a place of more constant warmth than those of great ones, as being liable to cool more quickly; and accordingly their nests are built warmer and deeper, lined on the inside with softer substances, and guarded above with a better covering. But it sometimes happens that the little architects are disturbed in their operations, and then they are obliged to make a nest, not such as they wish, but such as they can. The bird whose nest has been robbed several times, builds up her last in a very slovenly manner, con-

scious that, from the near approach of winter, she must not take time to give her habitation every possible advantage it is capable of receiving. When the nest is finished, nothing can exceed the cunning which the male and female employ to conceal it. If it is built in bushes, the pliant branches are so disposed as to hide it entirely from the view; if it be built among moss, nothing outwardly appears to show that there is a habitation within. It is always built near those places where food is found in greatest abundance; and they take care never to go in or out while there is any one in sight. The greater birds continue from their nests for some time, as their eggs take no damage in their absence; but the little birds are assiduous while they sit, and the nest is always occupied by the male when the female is obliged to seek for sustenance.

The first food of all birds of the sparrow kind, is worms and insects. Even the sparrow and the goldfinch, that when adult feed only upon grain, have both been fed upon insects while in the nest. The young ones, for some time after their exclusion from the shell, require no food; but the parent soon finds by their chirping and gaping that they begin to feel the approaches of hunger, and flies to provide them a plentiful supply. In her absence, they continue to lie close together, and cherish each other by their mutual warmth. During this interval also they preserve a perfect silence, uttering not the slightest note till the parent returns. Her arrival is always announced by a chirrup, which they perfectly understand, and which they answer all together, each petitioning for its portion. The parent distributes a supply to each by turns, cautiously avoiding to gorge them, but to give them often, though little at a time. The wren will in this manner feed seventeen or eighteen young ones without passing over one of them.

Such is the manner in which these birds bring forth and hatch their young; but it yet remains to usher them from the nest into life, and this they very assiduously perform. When they are full fledged, and fitted for short flights, the old ones, if the weather be fair, lead them a few yards from the nest, and then compel them to return. For two or three succeeding days they are led out in the same manner, but each day to seek more distant adventures. When it is peceived that they can fly, and shift for themselves, then the parents forsake them for ever, and pay them no more attention than they do to other birds in the same flock. Indeed it would seem, among these little animals, that from the moment their young are set out, all future connexion ceases between the male and female; they go separate ways, each to provide for itself during the rigours of winter, and, at the approach of spring, each seeks for a new associate.

In general, birds when they come to pair in spring, associate with those of their own age and place of abode. Their strength or courage is generally in proportion to their age: the oldest females first feel the accesses of desire, and the oldest males are the boldest to drive off all younger pretenders. Those next in courage and desire become pretenders till they are almost all provided in turn. The youngest come last, as, in fact, they are the latest in their inclinations. But still there are several, both males and females, that remain unprovided for either not happening to meet with each other, or at least not during the genial interval. Whether these mix with small birds of a different species, is a doubt which naturalists have not been able thoroughly to resolve. Addison, in some beautiful Latin lines inserted in the Spectator, is entirely of opinion that birds observe a

strict chastity of manners, and never admit caresses of a different tribe.

Chaste are their instincts, faithful is their fire,
No foreign beauty tempts to false desire;
The snow-white vesture and the glittering crown,
The simple plumage, or the glossy down,
Prompt not their love. The patriot bird pursues
His well acquainted tints, and kindred hues:
Hence through their tribes no mix'd polluted flame,
No monster-breed to mark the grove with shame:
But the chaste blackbird, to its partner true,
Thinks black alone is beauty's favourite hue:
The nightingale, with mutual passion blest,
Sings to its mate, and nightly charms the nest;
While the dark owl to court his partner flies,
And owns his offspring in their yellow eyes.

But whatever may be the poet's opinion, the probability is against this fidelity among the smaller tenants of the grove. The great birds are much more true to their species than these; and, of consequence, the varieties among them are more few. Of the ostrich, the cassowary, and the eagle, there are but few species; and no arts that man can use could probably induce them to mix with each other.

But it is otherwise with the small birds we are describing; it requires very little trouble to make a species between a goldfinch and a canary-bird, between a linnet and a lark. They breed frequently together; and produce a race, not, like the mules among quadrupeds, incapable of breeding again, for this motley mixture are as fruitful as their parents. What is so easily done by art, very probably often happens in a state of nature; and when the male cannot find a mate of his own species, he flies to one of another, that, like him, has been left out in pairing. This, some historians think, may have given rise to the great variety of small birds that are seen among us; some uncommon mixture might first have formed a new species, and this might have been continued down by birds of this species choosing to breed together.

Whether the great variety of our small birds may have arisen from this source, cannot now be ascertained: but certain it is, that they resemble each other very strongly, not only in their form and plumage, but also in their appetites and manner of living. The goldfinch, the linnet, and the yellow-hammer, though obviously of different species, yet lead a very similar life; being equally an active, lively salacious tribe, that subsist by petty thefts upon the labours of mankind, and repay them with a song. Their nests bear a similitude; and they are about the same time in hatching their young, which is usually fifteen days. Were I, therefore, to describe the manners of these with the same minuteness that I have done the greater birds, I should only present the reader with a repetition of the same accounts, animated neither by novelty nor information. Instead, therefore, of specifying each sort, I will throw them into groups; uniting those together that practice the same manners, or that are remarkable for similar qualifications.

Willoughby has divided all the smaller birds into those that have slender bills, and those that have short and thick bills. Those with slender bills chiefly live upon insects; those with short, strong bills, live mostly upon fruits and grain. Among slender-billed birds he enumerates the thrush, the blackbird, the fieldfare, the starling, the lark, the titmouse, the water-wagtail, the nightingale, the red-start, the robin red-breast, the beccafigo, the stone-chatter, the whinchat, the white-throat, the hedge-sparrow, the pettichaps, the golden-crowned wren, the wren, the humming-bird, and several other small birds of the sparrow kind, unknown in this part of the world.

All these, as was said, live for the most part upon insects, and are consequently of particular benefit to man. By these are his grounds cleared of the per-

nicious swarms of vermin that devour the budding leaves and flowers, and that even attack the root itself, before ever the vegetable can come to maturity. These seek for and destroy the eggs of insects that would otherwise propagate in numbers beyond the arts of man to extirpate; they know better than man where to seek for them; and thus at once satisfy their own appetites, and render him the most essential services.

But this is not the only merit of this tribe: in it we have the sweetest songsters of the grove; their notes are softer, and their manner more musically soothing than those of hard-billed birds. The foremost in musical fame are, the nightingale, the thrush, the blackbird, the lark, the red-breast, the black-cap, and the wren.

Birds of the sparrow kind, with thick and short bills, are the grosbeak, the greenfinch, the bullfinch, the cross-bill, the house-sparrow, the chaffinch, the brambling, the goldfinch, the linnet, the siskin, the bunting, the yellow-hammer, the ortolan, the wheat-ear, and several other foreign birds, of which we know rather the names than the history. These chiefly feed upon fruits, grain, and corn. They are often troublesome to man, as they are a numerous tribe; the harvest often suffers from their depredations; and while they are driven off from one end of the field, they fly round, and come in at the other. But these also have their uses: they are frequently the distributors of seeds into different districts; those grains which they swallow, are sometimes not wholly digested; and these, laid upon a soil congenial to them, embellish the face of nature with that agreeable variety which art but vainly attempts to imitate. The mistletoe plant, which we often see growing on the tops of elm and other trees, has been thought to be propagated in this manner; yet, as it is often seen

growing on the under side of the branch, and sometimes on a perpendicular shoot, it seems extraordinary how a seed could be deposited in that situation. However this be, there are many plants propagated from the depositions of birds; and some seeds are thought to thrive the better, for first having undergone a kind of maceration in the stomach of the little animal, before it is voided on the ground.

There are some agreeable songsters in this tribe also; and those who like a loud piercing pipe, endued with great variety and perseverance, will be pleased most with their singing. The songsters of this class are the canary-bird, the linnet, the chaffinch, the goldfinch, the greenfinch, the bullfinch, the brambling, the siskin, and the yellow-hammer. The note of these is not so generally pleasing as that of the soft-billed birds, but it usually holds longer; and in a cage, these birds are more easily fed, and hardy.

This class of small birds, like all the greater, has its wanderers, that leave us for a season, and then return, to propagate, to sing, or to embellish the landscape here. Some of this smaller kind, indeed, are called birds of passage, that do not properly come under the denomination; for though they disappear in one place, they never leave the kingdom, but are seen somewhere else. But there are many among them that take longer flights, and go to a region colder or warmer, as it suits their constitutions. The field-fare and the red-wing breed pass their summers in Norway, and other cold countries, and are tempted hither to our mild winters, and to those various berries which then abound with us, and make their principal food. The hawfinch and the crossbill are uncertain visitants, and have no stated times of migration. Swallows of every species disappear at the approach of winter. The nightingale, the black-cap, the fly-catcher, the willow-wren, the wheat-ear, the

whin-chat, and the stone-chatter, leave us long before the approach of winter; while the siskin and the linnet only forsake us when our winters are more than usually severe. All the rest of the smaller tribe never quit this country, but support the severest rigours of the climate.

Yet it must not be supposed that the manners of our little birds prevail in all other countries, and that such kinds as are stationary with us, never wander in other parts of Europe; on the contrary it happens, that many of those kinds which are birds of passage in England, are seen in other places never to depart, but to make one country their fixed residence the whole year round. It is also frequent, that some birds, which with us are faithful residents, in other kingdoms put on the nature of birds of passage, and disappear for a season.

The swallow, that with us is particularly remarked for being a bird of passage, in Upper Egypt, and in the island of Java, breeds and continues the whole year, without ever disappearing. Larks, that remain with us the year throughout, are birds of passage in Sweden, and forsake that climate in winter, to return again with the returning spring. The chaffinch, that with us is stationary, appears during the winter in Carolina and Virginia, but disappears totally in summer, to breed in the more northern regions. In Sweden, also, these little birds are seen returning, at the approach of spring, from the warmer climates, to propagate; which being accomplished by the latter end of autumn, the males and females separate; the males to continue among their native snows, the females to seek a warmer and gentler winter. On this occasion, they are seen in flocks that darken all the air, without a single male among them, making their way into the more southern regions of Denmark, Germany, and Holland. In this Amazon-like retreat,

thousands fall by the way; some by fatigue, some by want; but the greatest number by the nets of the fowler, the taking them being one of the chief amusements among the gentry where they pass. In short, the change of country with all this little tribe, is rather a pilgrimage than a journey, a migration rather of necessity than of choice.

Having thus given a general idea of the birds of this class, it will be proper to give some account of the most remarkable among them.

CHAPTER II.

OF THE THRUSH AND ITS AFFINITIES.

With the Thrush we may rank the red-wing, the field-fare, the black-bird, the ring-ouzel, and the water-ouzel.

These are the largest of the sparrow kind, and may be distinguished from all others of this class, as well by their size, which is well known, as by their bills, which are a little bending at the point, a small notch near the end of the upper chap, and the outmost toe adhering as far as the first joint of the middle toe. To this tribe may be also added the stare or starling, which, though with a flat bill, too much resembles these birds to be placed any where else.

The Missel-thrush is distinguished from all of the kind by its superior size, being much larger than any of them. It differs scarcely in any other respect from the throstle, except that the spots on the breast are larger. It builds its nest in bushes, or on the side of some tree, as all of this kind are found to do, and lays four or five eggs in a season. Its song

is very fine, which it begins in spring, sitting on the summit of a high tree. It is the largest bird of all the feathered tribe that has music in its voice; the note of all greater birds being either screaming, chattering, or croaking. It feeds on insects, holly and mistletoe berries; and sometimes sends forth a very disagreeable scream when frighted or disturbed.

The Blackbird, which in cold countries, and particularly upon the Alps, is sometimes seen all over white, is a beautiful and canorous bird, whistling all the spring and summer time with a note at a distance the most pleasing of all the grove. It is the deepest toned warbler of the woods; but it is rather unpleasant in a cage, being loud and deafening. It lays four or five bluish eggs, in a nest usually built at the stump of some old hawthorn, well plastered on the inside with clay, straw, and hair.

Pleasing, however, as this bird may be, the Blue-bird, described by Bellonius, is in every respect far superior. This beautiful animal entirely resembles a blackbird in all but its blue colour. It lives in the highest parts of the Alps, and even there chooses the most craggy rocks and the most frightful precipices for its residence. As it is rarely caught, it is in high estimation even in the countries where it breeds, but is still more valuable when carried from home. It not only whistles in the most delightful manner, but speaks with an articulate distinct voice. It is so docile, and observes all things with such diligence, that though waked at midnight by any of the family, it will speak and whistle at the word of command. Its colour, about the beginning of winter, from blue becomes black, which changes to its original hue on the first approaches of spring. It makes its nest in deep holes, in very high and inaccessible solitudes, and removes it not only from the accesses of man, but also hides it with surprising cunning from the

chamois, and other wild beasts that might annoy its young.

The manner of taking this beautiful bird is said to be this: The fowlers, either by chance, or by lying in wait, having found out the place where it builds, take with them a strong stilt or stake, such as the climbers of rocks make use of to assist them in their descent. With the assistance of this, they mount where an indifferent spectator would think it impossible to ascend, covering their heads at the same time to ward off any danger of the falling of pebbles or stones from above. At length, with extreme toil and danger, having arrived at the nest, they draw it up from the hole in which it is usually buried, and cherish the young with an assiduity equal to the pains they took to obtain them. It produces for the most part five young, and never more; it seldom descends into the plain country; flies swifter than a blackbird, and uses the same food.

The Field-fare and the Red-wing make but a short stay in this country. With us, they are insipid tuneless birds, flying in flocks, and excessively watchful to preserve the general safety. All their season of music and pleasure is employed in the more northern climates, where they sing most delightfully, perched among the forests of maples, with which those countries abound. They build their nests in hedges; and lay six bluish-green eggs spotted with black.

The Stare, distinguishable from the rest of this tribe by the glossy green of its feathers in some lights, and the purple in others, breeds in hollow trees, eaves of houses, towers, ruins, cliffs, and often in high rocks over the sea. It lays four or five eggs of a pale greenish ash colour, and makes its nest of straw, small fibres of roots, and such like. Its voice is rougher than the rest of this kind; but what it wants in the melody of its note, it compensates by

the facility with which it is taught to speak. In winter these birds assemble in vast flocks, and feed upon worms and insects. At the approach of spring they assemble in fields, as if in consultation together, and for three or four days seem to take no nourishment: the greater part leave the country, the rest breed here and bring up their young.

To this tribe might be added above a hundred other birds of nearly the thrush size, and living like them upon fruit and berries. Words could not afford variety enough to describe all the beautiful tints that adorn the foreign birds of the thrush kind. The brilliant green of the emerald, the flaming red of the ruby, the purple of the amethyst, or the bright blue of the sapphire, could not, by the most artful combination, show any thing so truly lively or delightful to the sight as the feathers of the Chilcoqui or the Tautotol. Passing, therefore, over these beautiful, but little known birds, I will only mention the American Mock-bird, the favourite songster of a region where the birds excel rather in the beauty of their plumage than the sweetness of their notes.

This valuable bird does not seem to vie with the feathered inhabitants of that country in the beauty of its plumage, content with qualifications that endear it to mankind much more. It is but a plain bird to the eye, about the size of a thrush, of a white and gray colour, and a reddish bill. It is possessed not only of its own natural notes, which are musical and solemn, but it can assume the tone of every other animal in the wood, from the wolf to the raven. It seems even to sport itself in leading them astray. It will at one time allure the lesser birds with the call of their males, and then terrify them when they have come near with the screams of the eagle. There is no bird in the forest but it can mimic, and there is none that it has not at times

deceived by its call. But not like such as we usually see tamed for mimicking with us, and who have no particular merit of their own, the mock-bird is ever surest to please when it is most itself. At those times it usually frequents the houses of the American planters; and sitting all night on the chimney-top, pours forth the sweetest and the most various notes of any bird whatever. It would seem, if accounts be true, that the deficiency of most other song-birds in that country is made up by this bird alone. They often build their nests in the fruit trees about houses, feed upon berries and other fruits, and are easily rendered domestic.

CHAPTER III.

OF THE NIGHTINGALE AND OTHER SOFT-BILLED SONG BIRDS.

THE Nightingale is not only famous among the moderns for its singing, but almost every one of the ancients who undertook to describe beautiful nature, has contributed to raise its reputation. "The nightingale," says Pliny, "that, for fifteen days and nights hid in the thickest shades, continues her note without intermission, deserves our attention and wonder. How surprising, that so great a voice can reside in so small a body! such perseverance in so minute an animal! With what a musical propriety are the sounds it produces modulated! The note at one time drawn out with a long breath, now stealing off into a different cadence, now interrupted by a break, then changing into a new note by an unexpected transition; now seeming to renew the same strain, then deceiving expectation! She sometimes seems to mur-

mur within herself; full, deep, sharp, swift, drawling, trembling; now at the top, the middle, and the bottom of the scale! In short, in that little bill seems to reside all the melody which man has vainly laboured to bring from a variety of musical instruments. Some even seem to be possessed of a different song from the rest, and contend with each other with great ardour. The bird overcome is then seen only to discontinue its song with its life."

This most famous of the feathered tribe visits England in the beginning of April, and leaves us in August. It is found but in some of the southern parts of the country, being totally unknown in Scotland, Ireland, or North Wales. They frequent thick hedges, and low coppices, and generally keep in the middle of the bush, so that they are rarely seen. They begin their song in the evening, and generally continue it for the whole night. For weeks together, if undisturbed, they sit upon the same tree; and Shakspeare rightly describes the nightingale sitting nightly in the same place, which I have frequently observed she seldom departs from.

From Pliny's description we should be led to believe this bird possessed of a persevering strain; but though it is in fact so with the nightingale in Italy, yet in our hedges in England the little songstress is by no means so liberal of her music. Her note is soft, various, and interrupted; she seldom holds it without a pause above the time that one can count twenty. The nightingale's pausing song would be the proper epithet for this bird's music with us, which is more pleasing than the warbling of any other bird, because it is heard at a time when all the rest are silent.

In the beginning of May the nightingale prepares to make its nest, which is formed of the leaves of trees, straw, and moss. The nest being very eagerly

sought after, is as cunningly secreted; so that but very few of them are found by the boys when they go upon these pursuits. It is built at the bottom of hedges, where the bushes are thickest, and best covered. While the female continues sitting, the male, at a good distance, but always within hearing, cheers the patient hour with his voice, and, by the short interruption of his song, often gives her warning of approaching danger. She lays four or five eggs, of which but a part in our cold climate, come to maturity.

The delicacy, or rather the fame of this bird's music, has induced many to abridge its liberty, to be secured of its song. Indeed, the greatest part of what has been written concerning it in our country, consists in directions how to manage it for domestic singing; while the history of the bird is confined to dry receipts for fitting it for the cage. Its song, however, in captivity, is not so very alluring; and the tyranny of taking it from those hedges where only it is most pleasing, still more depreciates its imprisoned efforts. Gesner assures us, that it is not only the most agreeable songster in a cage, but that it is possessed of a most admirable faculty of talking. He tells the following story in proof of his assertion, which he says was communicated to him by a friend. "Whilst I was at Ratisbon," says his correspondent, "I put up at an inn, the sign of the Golden Crown; where my host had three nightingales. What I am going to repeat is wonderful, almost incredible, and yet is true. The nightingales were placed separately, so that each was shut up by itself in a dark cage. It happened at that time, being the spring of the year, when those birds are wont to sing indefatigably, that I was so afflicted with the stone, that I could sleep but very little all night. It was usual then about midnight, when there was no

noise in the house, but all still, to hear the two nightingales jangling, and talking with each other, and plainly imitating men's discourses. For my part, I was almost astonished with wonder; for at this time, when all was quiet else, they held conference together, and repeated whatever they had heard among the guests by day. Those two of them that were most notable, and masters of this art, were scarce ten feet distant from one another. The third hung more remote, so that I could not so well hear it as I lay a-bed. But it is wonderful to tell how those two provoked each other, and by answering, invited and drew one another to speak. Yet did they not confound their words, or talk both together, but rather utter them alternately and of course. Besides the daily discourse of the guests, the chaunted out two stories, which generally held them from midnight till morning; and that with such modulations and inflections that no man could have taken to come from such creatures. When I asked the host if they had been taught, or whether he observed their talking in the night, he answered no: the same said the whole family. But I, who could not sleep for nights together, was perfectly sensible of their discourse. One of their stories was concerning the tapster and his wife, who refused to follow him to the wars as he desired her; for the husband endeavoured to persuade his wife, as far as I understood by the birds, that he would leave his service in that inn, and go to the wars in hopes of plunder. But she refused to follow him, resolving to stay either at Ratisbon, or go to Nuremberg. There was a long and earnest contention between them; and all this dialogue the birds repeated. They even repeated the unseemly words which were cast out between them, and which ought rather to have been suppressed and kept a secret. But the birds, not knowing the difference

between modest, immodest, honest, and filthy words, did out with them. The other story was concerning the war which the Emperor was then threatening against the Protestants; which the birds probably heard from some of the generals that had conferences in the house. These things did they repeat in the night after twelve o'clock, when there was a deep silence. But in the day-time, for the most part, they were silent, and seemed to do nothing but meditate and revolve with themselves upon what the guests conferred together as they sat at table, or in their walks. I verily had never believed our Pliny writing so many wonderful things concerning these little creatures, had I not myself seen with my eyes, and heard them with my ears uttering such things as I have related. Neither yet can I of a sudden write all, or call to remembrance every particular that I have heard."

Such is the sagacity ascribed to the nightingale; it is but to have high reputation for any one quality, and the world is ready enough to give us fame for others to which we have very small pretensions. But there is a little bird, rather celebrated for its affection to mankind than its singing, which, however, in our climate has the sweetest note of all others. The reader already perceives that I mean the Redbreast, the well-known friend of man, that is found in every hedge, and makes it vocal. The note of other birds is louder, and their inflections more capricious; but this bird's voice is soft, tender, and well supported; and the more to be valued as we enjoy it the greatest part of the winter. If the nightingale's song has been compared to the fiddle, the red-breast's voice has all the delicacy of the flute.

The red-breast during the spring, haunts the wood, the grove, and the garden: it retires to the thickest and shadiest hedge-rows to breed in. But in winter

it seems to become more domestic, and often to claim protection from man. Most of the soft-billed birds, the nightingale, the swallow, and the titmouse, leave us in the winter, when their insect food is no longer offered in plenty; but the red-breast continues with us the year round, and endeavours to support the famine of winter by chirping round the warm habitations of mankind, by coming into those shelters where the rigour of the season is artificially expelled, and where insects themselves are found in greater numbers, attracted by the same cause.

This bird breeds differently in different places: in some countries its nest is usually found in the crevice of some mossy bank, or at the foot of a hawthorn in hedge-rows; in others it chooses the thickest coverts, and hides its nest with oak leaves. The eggs are from four to five, of a dull white, with reddish streaks.

The Lark, whether the sky-lark, the wood, or the tit-lark, being all distinguishable from other little birds by the length of their heel, are louder in their song than either of the former, but not so pleasing. Indeed, the music of every bird in captivity produces no very pleasing sensations—it is but the mirth of a little animal insensible of its unfortunate situation: it is the landscape, the grove, the golden break of day, the contest upon the hawthorn, the fluttering from branch to branch, the soaring in the air, and the answering of its young, that gives the bird's song its true relish. These united improve each other, and raise the mind to a state of the highest, yet most harmless exultation. Nothing can in this situation of mind be more pleasing than to see the lark warbling upon the wing; raising its note as it soars, until it seems lost in the immense heights above us, the note continuing, the bird itself unseen; to see it then descending with a swell as it comes from the clouds

yet sinking by degrees as it approaches its nest, the spot where all its affections are centered, the spot that has prompted all this joy.

The lark builds its nest upon the ground, beneath some turf that serves to hide and shelter it. The female lays four or five eggs, of a dusky hue in colour, somewhat like those of a plover. It is while she is sitting that the male thus usually entertains her with his singing; and while he is risen to an imperceptible height, yet he still has his loved partner in his eye, nor once loses sight of the nest, either while he ascends or is descending. This harmony continues several months, beginning early in the spring on pairing. In winter they assemble in flocks, when their song forsakes them, and the bird-catchers destroy them in great numbers for the tables of the luxurious.

The Black-cap and the Wren, though so very diminutive, are yet prized by some for their singing. The former is called by some the mock nightingale; and the latter is admired for the loudness of its note, compared to the little body from whence it issues. It must be confessed, that this disproportion between the voice of a bird and its size in some measure demands our wonder. Quadrupeds in this respect may be considered as mutes to them. The peacock is louder than the lion, and the rabbit is not so loud as the wren. But it must be considered that birds are very differently formed; their lungs, in some measure, are extended through their whole body, while in quadrupeds they lie only in the breast. In birds there are a variety of cells which take in the air, and thus pour forth their contents at the little animal's command. The black cap and the wren, therefore, are as respectable for their voices, as they might be deemed inconsiderable for their size.

All these soft-billed birds, thus prized for their

singing, are rendered domestic, and brought up with assiduity by such as are fond of their voices in a cage. The same method of treatment serves for all, as their food and their habits are nearly the same. The manner of taking and treating them, particularly the nightingale, is this. A nightingale's nest may be found by observing the place where the male sings, and then by sticking two or three meal-worms (a kind of maggot found in flour) on some neighbouring thorn, which when he sees he will infallibly bear away to his young. By listening, he then may be heard with the female chirping to the young ones while they are feeding. When the nest is found, if the young are not fledged enough to be taken, they must not be touched with the hands, for then the old ones will perceive it, and entice them away. They should not be taken till they are almost as full of feathers as the old ones; and, though they refuse their meat, yet by opening their bills, you may give them two or three small bits at a time, which will make them soon grow tame, when they will feed themselves. They should be put, nest and all, into a little basket, which should be covered up warm; and they should be fed every two hours. Their food should be sheep-hearts, or other raw flesh meat, chopped very fine, and all the strings, skins, and fat, taken away. But it should always be mixed with hen eggs, boiled hard, upon which they will feed and thrive abundantly.

They should then be put in cages like the nightingale's back cage, with a little straw or dry moss at the bottom; but when they are grown large they should have ants' mold. They should be kept very clean, as indeed should be all singing birds whatsoever, for otherwise they will have the cramp, and perhaps the claws will drop off. In autumn they will sometimes abstain from their food for a fort-

night, unless two or three meal-worms be given them twice or thrice a-week, or two or three spiders in a day; they must likewise have a little saffron in their water. Figs chopped small among their meat will help them to recover their flesh. When their legs are cramped, they should be anointed with fresh butter, or capon's fat, three or four days together. If they grow melancholy, put white sugar-candy into their water, and feed them with sheep-heart, giving them three or four meal-worms in a day, and a few ants with their eggs. They should also have saffron in their water.

With regard to adult birds, those that are taken before the twenty-third of April are accounted the best, because after that they begin to pair. They usually haunt woods, coppices, and quickset hedges, where they may be taken in trap-cages baited with meal-worms. They should be placed as near the spot where the bird sings as possible; and before you fix the trap turn up the earth twice the breadth of the cage, because they will there look for food. They are also taken with lime twigs, placing them upon the hedge where they usually sing; and there should be meal-worms stuck at proper places to draw them into the snare. After they are taken, their wings should be gently tied with thread to prevent their beating themselves against the cage. This should be first hung in a private place, that the bird may not be disturbed; and it should be fed every two hours, at farthest, with sheep-heart and egg minced very fine, mixing it with meal-worms. However the first food must be worms, ants, caterpillars, and flies. You must, to feed the bird, take it in your hand, and open the bill with a stick made thick at one end, giving it the insects, or four or five bits of food as big as peas, to entice it to eat. Its common food should be mixed with ants, so that when the bird

goes to pick up the ants, it may pick up some of that also. The nightingale, when caged, begins to sing about the latter end of November, and continues its song till June.

CHAPTER IV.

OF THE CANARY-BIRD, AND OTHER HARD-BILLED SINGING BIRDS.

The Canary-bird is now become so common, and has continued so long in a domestic state, that its native habits, as well as its native country, seem almost forgotten. Though, by the name, it appears that these birds came originally from the Canary Islands, yet we have it only from Germany, where they are bred up in great numbers, and sold into different parts of Europe. At what period they were brought into Europe, is not well known; but it is certain that about a century ago they were sold at very high prices, and kept only for the amusement of the great. They have since been multiplied in great abundance, and their price is diminished in proportion to their plenty.

In its native islands, a region equally noted for the beauty of its landscapes and the harmony of its groves, the canary-bird is of a dusky gray colour, and so different from those usually seen in Europe, that some have even doubted whether it be of the same species. With us, they have that variety of colouring usual in all domestic fowls; some white, some mottled, some beautifully shaded with green; but they are more esteemed for their note than their beauty, having a high piercing pipe, as indeed all those of the finch tribe have, continuing for some

time in one breath without intermission, then raising it higher and higher by degrees, with great variety.

It is this that has rendered the canary-bird, next to the nightingale, the most celebrated songster; and as it is more easily reared than any of the soft-billed birds, and continues its song throughout the year, it is rather the most common in our houses. Rules, therefore, have been laid down, and copious instructions given, for breeding these birds in a domestic state; which, as a part of them may conduce towards the natural history of the bird, I will take leave to transcribe.

In choosing the canary-bird, those are best that appear with life and boldness, standing upright upon the perch like a sparrow-hawk, and not apt to be frighted at every thing that stirs. If its eyes look cheerful, and not drowsy, it is a sign of health; but, on the contrary, if it hides its head under the wing, and gathers its body up, these are symptoms of its being out of order. In choosing them, the melody of the song should also be minded: some will open with the notes of the nightingale, and, running through a variety of modulations, end like the tit-lark; others will begin like the sky-lark, and, by a soft melodious turn, fall into the notes of the nightingale. These are lessons taught this bird in its domestic state, and generally taught it by others; but its native note is loud, shrill, piercing, and enough to deafen the hearers. There are persons who admire each of these songs, but the second is in the most general estimation.

Canary-birds sometimes breed all the year round; but they most usually begin to pair in April, and to breed in June and August. Those are said to be the best breeders that are produced between the English and the French.

Towards the latter end of March, a cock and a

hen should be put together in a small cage, where they will peck at each other in the beginning, but will soon become thoroughly reconciled. The room where they are kept to breed should be so situated as to let the birds have the benefit of the morning sun, and the windows should be of wire, not glass, that they may enjoy the benefit of the air. The floor of the room should be kept clean, and sometimes there should be dry gravel or sand sifted upon it. There should also be two windows, one at each end, and several perches at proper distances for the birds to settle on, as they fly backwards and forwards. A tree in the middle of the room would be the most convenient to divert the birds, and sometimes to serve for building their nests upon.

In Germany they prepare a large room, and build it in the manner of a barn, being much longer than broad, with a square place at each end, and several holes to go into those square places. In those outlets they plant several sorts of trees, in which the birds take great delight to sing and breed. The bottom of the place they strew with sand, and upon it cast rape-seed, chick-weed, and groundsil, which the old birds feed upon while breeding. In the body of the house they put all sorts of stuff for building the nest, and brooms, one under the other, in all the corners, for the birds to build in. These they separate by partitions from each other, to prevent those above flying down upon, or otherwise incommoding such as breed below. The light also is excluded, for no bird is fond of having light come to its nest.

With us the apparatus for breeding is less expensive; a little breeding-cage sometimes suffices, but seldom any thing more extensive than a small room. While the birds are pairing it is usual to feed them with soft meat; that is, bread, mawseed, a little scalded rape-seed, and near a third part of an egg. The

room should be furnished with stuff for making their nests, such as fine hay, wool, cotton, and hair. These materials should be thoroughly dry, and then mixed and tied together, in such a manner that the birds may readily pull out what they want. This should be hung in a proper part of the room, and the male will take his turn in building the nest, sitting upon the eggs, and feeding the young. They are generally two or three days in building their nests; the hen commonly lays five eggs; and in the space of fourteen days the young will be excluded. So prolific are these birds sometimes, that the female will be ready to hatch a second brood before the first are able to quit the nest. On these occasions she leaves the nest and the young, to provide herself with another to lay her new brood in. In the mean time the male, more faithful to the duties of his trust, breeds up the young left behind, and fits them for a state of independence.

When the young ones are excluded, the old ones should be supplied with a sufficiency of soft food every day, with likewise fresh greens, such as cabbage, lettuce, and chick-week—in June shepherd's purse, and in July and August plaintain. They are never to have groundsil after the young are excluded. With these different delicacies the old ones will take particular care to feed and bring up their young; but it is usual, when they can feed themselves, to be taken from the nest and put into cages. Their meat then is the yolk of an egg boiled hard, with an equal quantity of fine bread, and a little scalded rape-seed: this must be bruised till it becomes fine, and then it may be mixed with a little maw-seed; after which, blend all together, which is to be supplied them fresh every day.

The canary-bird, by being kept in company with the linnet or the goldfinch, pairs and produces a mix-

1. Goatsucker — 2. White-backed Coly
3. Gold-headed Manaken — 4. Tanager.

ed breed, more like the canary-bird, and resembling it chiefly in its song. Indeed, all this tribe with strong bills and piercing notes, and feeding upon grain, have the most strong similitude to each other, and may justly be supposed, as M. Buffon imagines, to come from the same original. They all breed about the same time; they frequent the same vegetables; they build in the same hedges and trees; and are brought up for the cage with the same food and precautions. The linnet, the bullfinch, and the goldfinch, when we know the history of the canary-bird, have scarcely any peculiarities that can attract our curiosity, or require our care. The only art necessary with all those that have no very fine note, is to breed them up under some more pleasing harmonist. The goldfinch learns a fine song from the nightingale; and the linnet and bullfinch may be taught, forgetting the wild notes of nature, to whistle a long and regular tune.

CHAPTER V.

OF THE SWALLOW, AND ITS AFFINITIES.

An idea of any one bird in the former classes will give us some tolerable conception of the rest. By knowing the linnet or the canary-bird, we have some notion of the manners of the goldfinch; by exhibiting the history of the nightingale, we see also that of the black-cap or the titmouse. But the swallow tribe seems to be entirely different from all the former; different in their form, different in their habits, and unlike in all the particulars of their history.

In this tribe is to be found the Goat-sucker, which may be styled a nocturnal swallow: it is the largest

of this kind, and is known by its tail, which is not forked like that of the common swallow. It begins its flight at evening, and makes a loud singular noise, like the whirr of a spinning-wheel. To this also belongs the House Swallow, which is too well known to need a description: the Martin, inferior in size to the former, and the tail much less forked; it differs also in its nest, which is covered at top, while that of the house swallow is open: and the Swift, rather larger than the house swallow, with all the toes standing forward, in which it differs from the rest of its kind. All these resemble each other so strongly, that it is not without difficulty the smaller kinds are known asunder.

These are all known by their very large mouths, which when they fly are always kept open; they are not less remarkable for their short slender feet, which scarce are able to support the weight of their bodies; their wings are of immoderate extent for their bulk; their plumage is glossed with a rich purple; and their note is a slight twittering, which they seldom exert but upon the wing.

This peculiar conformation seems attended with a similar peculiarity of manners. Their food is insects, which they always pursue flying. For this reason, during fine weather, when the insects are most likely to be abroad, the swallows are for ever upon the wing, and seen pursuing their prey with amazing swiftness and agility. All smaller animals, in some measure, find safety by winding and turning, when they endeavour to avoid the greater; the lark thus evades the pursuit of the hawk, and man the crocodile. In this manner, insects upon the wing endeavour to avoid the swallow; but this bird is admirably fitted by nature to pursue them through their shortest turnings. Besides a great length of wing, it is also provided with a long tail, which, like a rudder turns

it in its most rapid motions; and thus, while it is possessed of the greatest swiftness, it is also possessed of the most extreme agility.

Early therefore in the spring, when the returning sun begins to rouse the insect tribe from their annual state of torpidity; when the gnat and the beetle put off their earthly robes and venture into air, the swallow then is seen returning from its long migration beyond the ocean, and making its way feebly to the shore. At first, with the timidity of a stranger it appears but seldom, and flies but slowly and heavily along. As the weather grows warmer and its insect supply increases, it then gathers greater strength and activity. But it sometimes happens that a rainy season, by repelling the insects, stints the swallow in its food; the poor bird is then seen slowly skimming along the surface of the ground, and often resting after a flight of a few minutes. In general, however, it keeps on the wing, and moving with a rapidity that nothing can escape. When the weather promises to be fair, the insect tribe feel the genial influence, and make bolder flights; at that time the swallow follows them in their aërial journeys, and often rises to imperceptible heights in the pursuit. When the weather is likely to be foul, the insects feel the first notices of it; and from the swallow's following low, we are often apprized of the approaching change.

When summer is fairly begun, and more than a sufficient supply for sustaining the wants of nature every where offers, the swallow then begins to think of forming a progeny. The nest is built with great industry and art, particularly by the common swallow, which builds it on the tops of chimnies. The martin sticks it to the eaves of houses. The goatsucker, as we are told, builds it on the bare ground. This nest is built with mud from some neighbouring

brook, well tempered with the bill, moistened with water for the better adhesion, and still farther kept firm by long grass and fibres; within, it is lined with goose-feathers, which are ever the warmest and the neatest. The martin covers its nest at top, and has a door to enter at, the swallow leaves her's quite open. But our European nests are nothing to be compared with those the swallow builds on the coasts of China and Coromandel; the description of which I will give in the plain honest phrase of Willoughby. "On the sea-coast of the kingdom of China," says he, "a sort of party-coloured birds, of the shape of swallows, at a certain season of the year, which is their breeding time, come out of the midland country to the rocks, and from the foam or froth of the sea-water dashing against the bottom of the rocks, gather a certain clammy, glutinous matter, perchance the spawn of whales or other young fishes, of which they build their nests, wherein they lay their eggs and hatch their young. These nests the Chinese pluck from the rocks, and bring them in great numbers into the East Indies to sell. They are esteemed, by gluttons, as great delicacies; who, dissolving them in chicken or mutton broth, are very fond of them; far before oysters, mushrooms, or other dainty and lickerish morsels." What a pity this luxury hath not been introduced among us; and then our great feasters might be enabled to eat a little more!

The swallow usually lays from five to six eggs, of a white colour, speckled with red; and sometimes breeds twice a-year. When the young brood are excluded, the swallow supplies them very plentifully, the first brood particularly, when she finds herself capable of producing two broods in a year. This happens when the parents come early, when the season is peculiarly mild, and when they begin to pair soon. Sometimes they find a difficulty in

rearing even a single nest, particularly when the weather has been severe, or their nests have been robbed in the beginning of the season. By these accidents, this important task is sometimes deferred to the middle of September.

At the latter end of September they leave us; and for a few days previous to their departure, assemble in vast flocks on house tops as if deliberating on the fatiguing journey that lay before them. This is no slight undertaking, as their flight is directed to Congo, Senegal, and along the whole Morocco shore. There are some, however, left behind in this general expedition, that do not part till eight or ten days after the rest. These are chiefly the latter weakly broods, which are not yet in a condition to set out. They are sometimes even too feeble to venture till the setting in of winter, while their parents vainly exhort them to efforts which instinct assures them they are incapable of performing. Thus it often happens that the wretched little families, being compelled to stay, perish the first cold weather that comes; while the tender parents share the fate of their offspring, and die with their new-fledged brood.

Those that migrate are first observed to arrive in Africa, as M. Adanson assures us, about the beginning of October. They are thought to have performed their fatiguing journey in the space of seven days. They are sometimes seen when interrupted by contrary winds, wavering in their course far off at sea, and lighting upon whatever ship they find in their passage. They then seem spent with famine and fatigue; yet still they boldly venture, when refreshed by a few hours rest, to renew their flight, and continue the course which they had been steering before.

These are facts proved by incontestible authority; yet it is a doubt whether all swallows migrate in this manner or whether there may not be some species

of this animal that, though externally alike, are so internally different, as to be very differently affected by the approach of winter. We are assured from many, and these not contemptible witnesses, that swallows hide themselves in holes under ground, joined close together bill against bill, and feet against feet. Some inform us, that they have seen them taken out of the water, and even from under the ice, in bunches, where they are asserted to pass the winter without motion. Reaumur, who particularly interested himself in this inquiry, received several accounts of bundles of swallows being thus found in quarries and under the water. These men, therefore, have a right to some degree of assent, and are not to lose all credit from our ignorance of what they aver.

All, however, that we have hitherto dissected, are formed within like other birds, and seem to offer no observable variety. Indeed that they do not hide themselves under water, has been pretty well proved by the noted experiment of Frisch, who tied several threads died in water-colours round the legs of a great number of swallows that were preparing for their departure: these, upon their return the ensuing summer, brought their threads back with them, no way damaged in their colour; which they most certainly would, if, during the winter, they had been steeped in water. Yet still this is a subject on which we must suspend our assent, as Klein, the naturalist has brought such a number of proofs in defence of his opinion that swallows are torpid in winter, as even the most incredulous must allow to have some degree of probability.

CHAPTER VI.

OF THE HUMMING-BIRD, AND ITS VARIETIES.

HAVING given some history of the manners of the most remarkable birds of which accounts can be obtained, I might now go to a very extensive tribe, remarkable for the splendour and the variety of their plumage: but the description of the colours of a beautiful bird has nothing in it that can inform or entertain; it rather excites a longing, which it is impossible for words to satisfy. Naturalists, indeed, have endeavoured to satisfy this desire by coloured prints; but, beside that these at best give only a faint resemblance of nature, and are a very indifferent kind of painting, the bird itself has a thousand beauties, that the most exquisite artist is incapable of imitating. They, for instance, who imagine they have a complete idea of the beauty of the little tribe of Manikin birds, from the pictures we have of them, will find themselves deceived when they compare their draughts with nature. The shining greens, the changeable purples, and the glossy reds, are beyond the reach of the pencil; and very far beyond the coloured print, which is but a poor substitute to painting. I have therefore declined entering into a minute description of foreign birds of the sparrow kind, as sounds would never convey an adequate idea of colours.

There is one species, however, that I will conclude the history of this class with; as, though the least, it will certainly be allowed the most beautiful of all others. In quadrupeds, the smallest animals are noxious, ugly, and loathsome; the smallest of birds are the most beautiful, innocent, and sportive. Of all those that flutter in the garden, or paint the

landscape, the Humming-bird is the most delightful to look upon, and the most inoffensive.

Of this charming little animal there are six or seven varieties, from the size of a small wren, down to that of a humble bee. An European could never have supposed a bird existing so very small, and yet completely furnished out with a bill, feathers, wings, and intestines, exactly resembling those of the largest kind. A bird not so big as the end of one's little finger, would probably be supposed but a creature of imagination, were it not seen in infinite numbers, and as frequent as butterflies in a summer's day, sporting in the fields of America, from flower to flower, and extracting their sweets with its little bill.

The smallest humming-bird is about the size of a hazel nut. The feathers on its wings and tail are black; but those on its body and under its wings, are of a greenish-brown, with a fine red cast or gloss, which no silk or velvet can imitate. It has a small crest on its head, green at the bottom, and as it were gilded at the top, and which sparkles in the sun like a little star in the middle of its forehead. The bill is black, straight, slender, and of the length of a small pin. The larger humming-bird is near half as big as the common wren, and without a crest on its head; but to make amends, it is covered, from the throat half way down the belly, with changeable crimson-coloured feathers, that in different lights change to a variety of beautiful colours, much like an opal. The heads of both are small, with very little round eyes as black as jet.

It is inconceivable how much these add to the high finishing and beauty of a rich luxurious western landscape. As soon as the sun is risen, the humming-birds of different kinds are seen fluttering about the flowers, without ever lighting upon them. Their wings are in such rapid motion, that it is

impossible to discern their colours, except by their glittering. They are never still, but continually in motion, visiting flower after flower, and extracting its honey as if with a kiss. For this purpose they are furnished with a forky tongue, that enters the cup of the flower, and extracts its nectared tribute. Upon this alone they subsist. The rapid motion of their wings brings out a humming sound, from whence they have their name; for whatever divides the air swiftly must thus produce a murmur.

The nests of these birds are not less curious than the rest: they are suspended in the air, at the point of the twigs of an orange, a pomegranate, or a citron tree; sometimes even in houses, if they find a small and convenient twig for the purpose. The female is the architect, while the male goes in quest of materials; such as cotton, fine moss, and the fibres of vegetables. Of these materials a nest is composed, of about the size of a hen's egg cut in two, admirably contrived, and warmly lined with cotton. They lay two eggs at a time, and never more, about the size of small peas, and as white as snow, with here and there a yellow speck. The male and the female sit upon the nest by turns; but the female takes to herself the greatest share. She seldom quits the nest, except a few minutes in the morning and evening, when the dew is upon the flowers, and their honey in perfection. During this short interval the male takes her place; for, as the egg is so small, the exposing it ever so short a time to the weather would be apt to injure its contents, the surface exposed being so great in comparison to the bulk. The time of incubation continues twelve days; at the end of which the young ones appear, much about the size of a blue-bottle fly. They are at first bare; by degrees they are covered with down; and at last

feathers succeed, but less beautiful at first than those of the old ones.

"Father Labat's companion in the mission to America, found the nest of a humming-bird in a shed that was near the dwelling-house, and took it in at a time when the young ones were about fifteen or twenty days old; he then placed them in a cage at his chamber window, to be amused by their sportive flutterings; but he was soon surprised to see the old ones, that came and fed their brood regularly every hour in the day. By these means they themselves soon grew so tame that they seldom quitted the chamber, but, without any constraint, came to live with their young ones. All four have frequently come to perch upon their master's hand, chirruping as if they had been at liberty abroad. He fed them with a very fine clear paste, made of wine, biscuit, and sugar. They thrust their tongues into this paste, till they were satisfied, and then fluttered and chirruped about the room. I never beheld any thing more agreable," continues he," than this lovely little family, that had taken possession of my companion's chamber, and that flew out and in just as they thought proper, but were ever attentive to the voice of their master when he called them. In this manner they lived with him for above six months; but, at a time when he expected to see a new colony formed, he unfortunately forgot to tie up their cage to the ceiling at night, to preserve them from the rats, and he found they were devoured in the morning."

These birds, on the continent of America, continue to flutter the year round, as their food, which is the honey of flowers, never forsakes them in those warm latitudes where they are found. But it is otherwise in the islands of the Antilles, where, when the winter season approaches, they retire, and, as

some say, continue in a torpid state during the severity of that season. At Surinam and Jamaica, where they constantly have flowers, these beautiful birds are never known to disappear.

It is a doubt whether or not these birds have a continued note in singing. All travellers agree, that beside the humming noise produced by their wings, they have a little interrupted chirrup; but Labat asserts that they have a most pleasing melancholy melody in their voices, though small and proportioned to the organs which produce it. It is very probable that, in different places, their notes are also different; and as there are some that continue torpid all the winter, there may likewise be some with agreeable voices, though the rest may in general be silent.

The Indians formerly made great use of this pretty bird's plumage, in adorning their belts and headdress. The children take them in the fields upon rings smeared with bird-lime: they approach the place where the birds are flying, and twirling their rings in the air, so allure them, either by the colour or the sound, that the simple little creature comes to rest upon the ring, and is seized. They are then instantly killed and gutted, and hung up in the chimney to dry. Those who take greater care, dry them in a stove, which is not so likely to injure the plumage as the foregoing method. Their beautiful feathers were once the ornament of the highest rank of savage nobility; but at present they take the bird rather for the purpose of selling it as a curiosity to the Europeans, than that of ornament for themselves. All the taste for savage finery is wearing out fast, even among the Americans. They now begin to adopt, if not the dresses of Europe, at least the materials of which they are composed. The wandering

warrior is far from thinking himself fine at present with his bow and his feathered crown; his ambition reaches to higher ornaments, a gun, a blue shirt, and a blanket.

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